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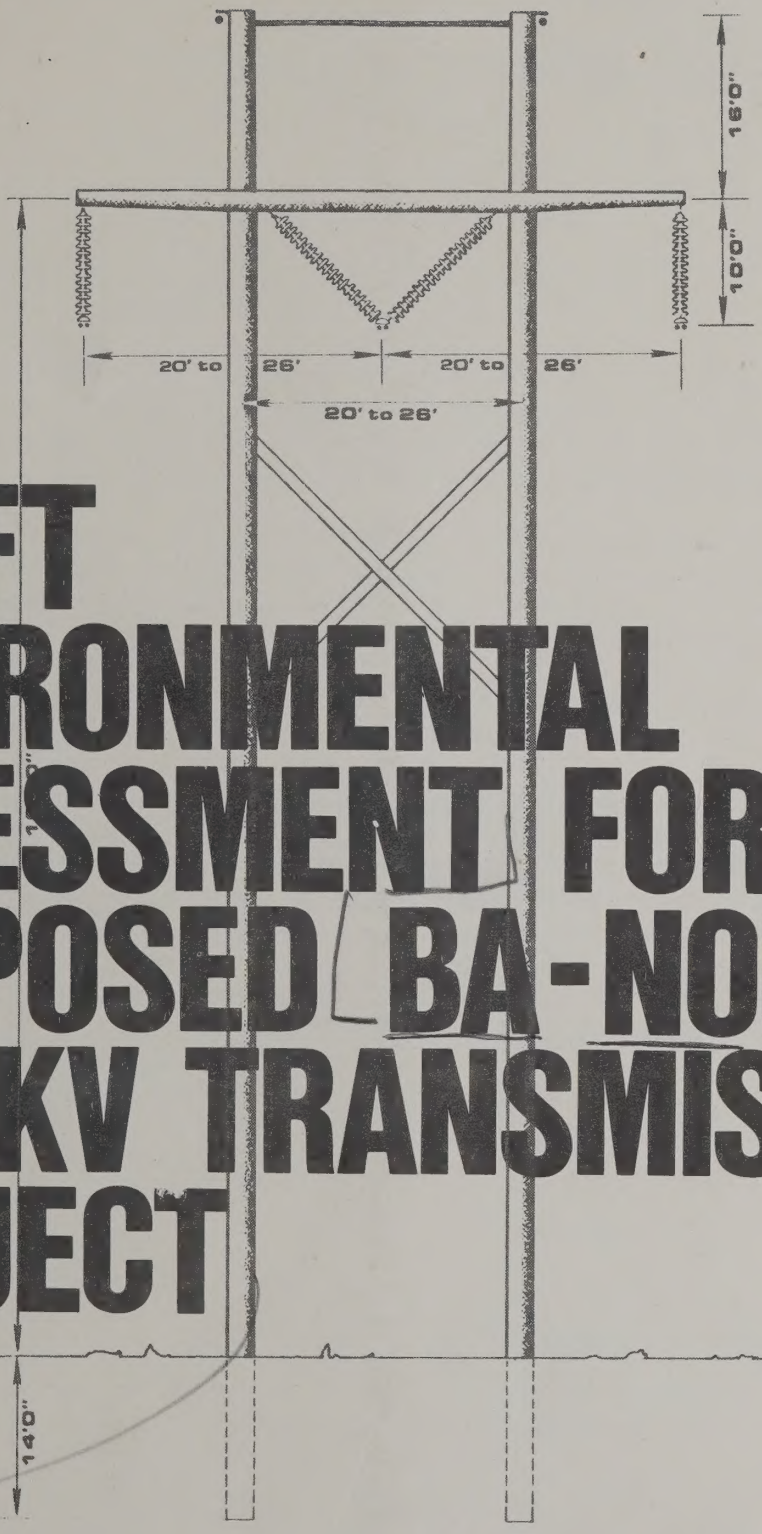

DRAFT ENVIRONMENTAL ASSESSMENT FOR PROPOSED BA-NORTON 345 KV TRANSMISSION PROJECT

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Enclosed for your review and comment is the Draft Environmental Assessment for the Public Service Company of New Mexico's proposed BA-Norton 345 kV Transmission Project. The document was prepared by the BLM, New Mexico State Office, Non-Bureau Energy Initiatives Team for the Albuquerque District Office.

This assessment is based on information supplied by Federal, State, and local agencies and interested private individuals. The purpose of the document is to indicate the probable environmental affects of the proposed action and to ensure that these affects are given consideration in the decisionmaking process.

The decisionmaking process will include economic, technical, and other considerations, as well as, the anticipated environmental affects.

I would appreciate receiving comments on the environmental affects of the Proposed Action. The comment period will run through November 23, 1981. Comments received after the review period will be considered in the decisionmaking process even though they may be too late for inclusion in the Final Environmental Assessment.

Your comments should be sent to:

State Director (922)
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P. O. Box 1449
Santa Fe, New Mexico 87501

Sincerely yours,

L. Paul Applegate

District Manager,
Albuquerque

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DRAFT

ENVIRONMENTAL ASSESSMENT

FOR THE

BA-NORTON 345 KV TRANSMISSION PROJECT

SANDOVAL AND SANTA FE COUNTIES, NEW MEXICO

Prepared by:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

New Mexico State Office
Division of Planning and Environmental Coordination
Non-Bureau Energy Initiative Team

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October, 1981

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SUMMARY

The Public Service Company of New Mexico (PNM) has proposed the construction of a 345 kV transmission line connecting the existing BA station, near Algodones, New Mexico to the existing Norton station west of Santa Fe, New Mexico. The Proposed Action includes approximately 40 miles of new transmission line and expansion of the Norton station.

Approximately 21 miles of Bureau of Land Management (BLM)-administered lands would be crossed by the Proposed Action. The BLM has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality Regulations (40 CFR 1500-1508).

Scoping meetings were held to solicit public views on the Proposed Action (see Chapter 4). The meetings indicated that the major public concerns related to land use questions and potential visual resource impacts. Approximately 20 route segments were identified between the existing BA and Norton stations. From these, a relatively large number of combinations are possible. However, based on input from scoping meetings and contacts with other agencies only five alternatives to the Proposed Action were selected for detailed analysis.

Each of the five alternatives were selected because they each avoided some specific resource or land use conflict. (See Chapter 1, Alternatives).

Based on impact analysis, the BLM has selected Route 6 as it's Preferred Alternative. (See Impact Summary Tables for the differences in impacts of the six alternative routes.)

This preference is based on Route 6 having:

-fewer miles of soil with high erosion potential
-fewer miles of important wildlife habitat
-no known archeological sites within close proximity to the route
-fewer miles of high visual impacts and less obvious crossing of Highway 85
-no potential conflicts with proposed Los Atrevidos subdivision
-no effect on the urbanizing outskirts of Santa Fe and no conflicts with Santa Fe Country Club
-no effect on La Bajada village and escarpment
-least effect on Santa Fe River Canyon

The resources for which Route 6 has more effects than the other routes (i.e., vegetation, areas of low reclamation potential) can be mitigated (see Chapter 3).

The BLM's preference is different thatn the applicant's Proposed Action. The applicant's preference includes the following rationale:

-ease of acquiring private ROW's
-crosses less private land
-more of the route follows existing ROW's
-more existing access roads

ROUTE ALTERNATIVE SUMMARY IMPACT TABLE

IMPACTS TO RESOURCES	PROPOSED ACTION 1	2	3	ROUTES 4	5	PREFERED ALTERNATIVE 6	NO ACTION
CLIMATE:	There would be no impacts to Climate from any alternative.						
AIR QUALITY:	Small increase in suspended particulates from dust associated with construction and transportation along all routes.						No Impact
GEOLOGY (Geologic Hazards): La Bajada Escarpment Has The Potential For Landslides Without Proper Engineering.	Crosses and parallels La Bajada escarpment for 6.5 miles.	No Hazards	Crosses .4 miles of La Bajada escarpment.	Crosses .8 miles of La Bajada escarpment.	Crosses 1.9 miles of La Bajada escarpment.	No Hazards	No Hazards
MINERAL RESOURCES: Potential Conflict On La Bajada Mesa North Of Santa Fe Canyon Due To Pending Uranium Prospecting Permits.	Crosses Santa Fe Canyon along segment E.	No Conflicts	No Conflicts	Crosses La Bajada Mesa just north of Santa Fe Canyon along segment D.	Crosses Santa Fe Canyon.	Crosses Santa Fe Canyon along segment K.	No Conflict
PALEONTOLOGY: (Miles Through Areas Having Potential For Fossil Occurance.)	11 miles moderate, 5 miles limited, 1 mile unknown.	11 miles moderate, 1 mile unknown.	7.5 miles limited.	8.5 miles limited.	14.6 miles limited, 1 mile unknown.	11 miles moderate, .5 miles limited.	No Impact
SOILS: (Miles Of High Erosion Potential.)	24 miles.	20 miles.	18 miles.	24 miles.	22 miles.	22 miles.	No Impact
WATER RESOURCES:	There are no impacts to Water Resources from any alternative.						
WETLANDS:	There are no impacts to Wetlands from any alternative.						
VEGETATION: (Acres Of Temporary Disturbance.)	94.6 acres.	93.5 acres.	93.1 acres.	81.1 acres.	78.8 acres.	96.1 acres.	No Disturbance
(Acres of Permanent Disturbance.)	5.7 acres.	5.6 acres.	5.5 acres.	5.6 acres.	5.6 acres.	5.6 acres.	No Disturbance
(Acres of Low Reclamation Potential.)	23.7 acres.	31.7 acres.	25.0 acres.	25.7 acres.	22.6 acres.	32.8 acres.	No Disturbance
WILDLIFE: (Acres of Important Habitat Disturbed.)	5.7 acres.	2.4 acres.	24.4 acres.	7.6 acres.	5.7 acres.	5.1 acres.	No Disturbance
CULTURAL RESOURCES: (Number Of Known And Unknown Sites Within 200 Feet Of Route.)	1 site.	1 site.	9 sites.	1 site.	0	0	No Disturbance
VISUAL RESOURCES: (Miles Of High Visual Impact.)	5.3 miles.	11.8 miles.	9.7 miles.	8 miles.	8 miles.	3 miles.	No Impacts

IMPACTS TO RESOURCES	PROPOSED ACTION 1	ROUTES 2	3	4	5	PREFERED ALTERNATIVE 6	NO ACTION
NOISE: (Potential For Disturbance To Human Habitation From The Noise Of Construction.)	Minimal along entire route.	High potential near Santa Fe along segment F.	Low potential near La Bajada village.	Low potential near La Bajada village.	Minimal along entire route.	Minimal along entire route.	No Disturbance
LAND USE: (Conflicts With Existing And Future Developments.)	Conflicts with a planned development near Santa Fe Canyon along segment E.	Conflicts with existing use near Santa Fe.	Conflicts with limited as use and scattered residences.	Close to La Bajada village.	Conflicts with a planned development near Santa Fe Canyon.	No conflicts	No Conflicts
LIVESTOCK GRAZING:	There are not conflicts to Grazing from any alternative.						
RECREATION: (Conflicts With Designated Recreation.)	No Conflicts.	Golf course near Santa Fe.	No Conflicts.	No Conflicts.	No Conflicts.	No Conflicts.	No Conflict
WILDERNESS AREAS: ACEC's: FLOODPLAINS: TRANSPORTATION:	There are no impacts to these resources from any alternative.						
SOCIAL AND ECONOMIC CONDITIONS: (Potential Conflicts With Social Attitudes And Human Quality Of Life.)	No Conflicts.	Conflicts with existing housing development near Santa Fe.	Conflicts with Indian attitudes about crossing Indian land.	Conflicts with Indian attitudes about crossing Indian land.	Conflicts with Indian attitudes about crossing Indian land.	No Conflicts.	Future potential for disturbing human quality of life in northern New Mexico from power outages.

CHAPTER 1
PROPOSED ACTION AND ALTERNATIVES

INTRODUCTION

On December 17, 1980, the Public Service Company of New Mexico (PNM) applied to the Bureau of Land Management (BLM) for a rights-of-way (ROW) grant to cross public lands. The BLM is preparing this Environmental Assessment (EA) in accordance with the National Environmental Policy Act and the implementing regulations of the Council on Environmental Quality (43 CFR 1500-1508).

PNM proposes to construct approximately 40 miles of 345 kilovolt (kV) transmission line to connect the existing BA station, northeast of Albuquerque, New Mexico to the existing Norton station northwest of Santa Fe, New Mexico. The transmission line would provide additional bulk electrical capacity to serve northern New Mexico. This proposal would also involve installation of additional equipment in the existing BA and Norton stations and an expansion of the Norton station (from 2.7 acres to 8.2 acres).

The Area Map (Figure 1-1) shows the general location of the proposed facilities. The Federal action is to either approve or disapprove PNM's application for ROW across public lands. The expected life of the project is 50 years.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to provide additional capacity to deliver power to PNM's northern New Mexico service area. At the present time, the applicant has stated that the northern area's transmission system needs additional power delivery capacity. Northern area customers risk possible loss of service under several outage conditions such as the loss of a transformer or line. The transmission system's capability to serve the area's greatest winter demand during these outages would be deficient by 14 megawatts (MW) (Table A-1, Appendix A) during the 1981 winter and would worsen each successive year (PNM, 1981). PNM's proposal takes potential future needs and planning into consideration.

HISTORY AND BACKGROUND

PNM is a public utility engaged in the generation, transmission, and distribution of electric power within the State of New Mexico. PNM provides electric service to a large area in the north-central part of the State, including the cities of Las Vegas, Santa Fe, Albuquerque, Belen, Bernalillo, and areas in the southern and western parts of New Mexico. Bulk power is also supplied over PNM's transmission system to Plains Electric Generation and Transmission Cooperative Inc., (PGT), Texas-New Mexico Power Company, El Paso Electric Company, and the U.S. Department of Energy (DOE).

PNM and PGT proposed a BA-Norton-Ojo 345 kilovolt (kV) transmission project in the late 1970's to increase system reliability in northern New Mexico. Difficulties in defining the Ojo-Norton portion of the route resulted in delay of

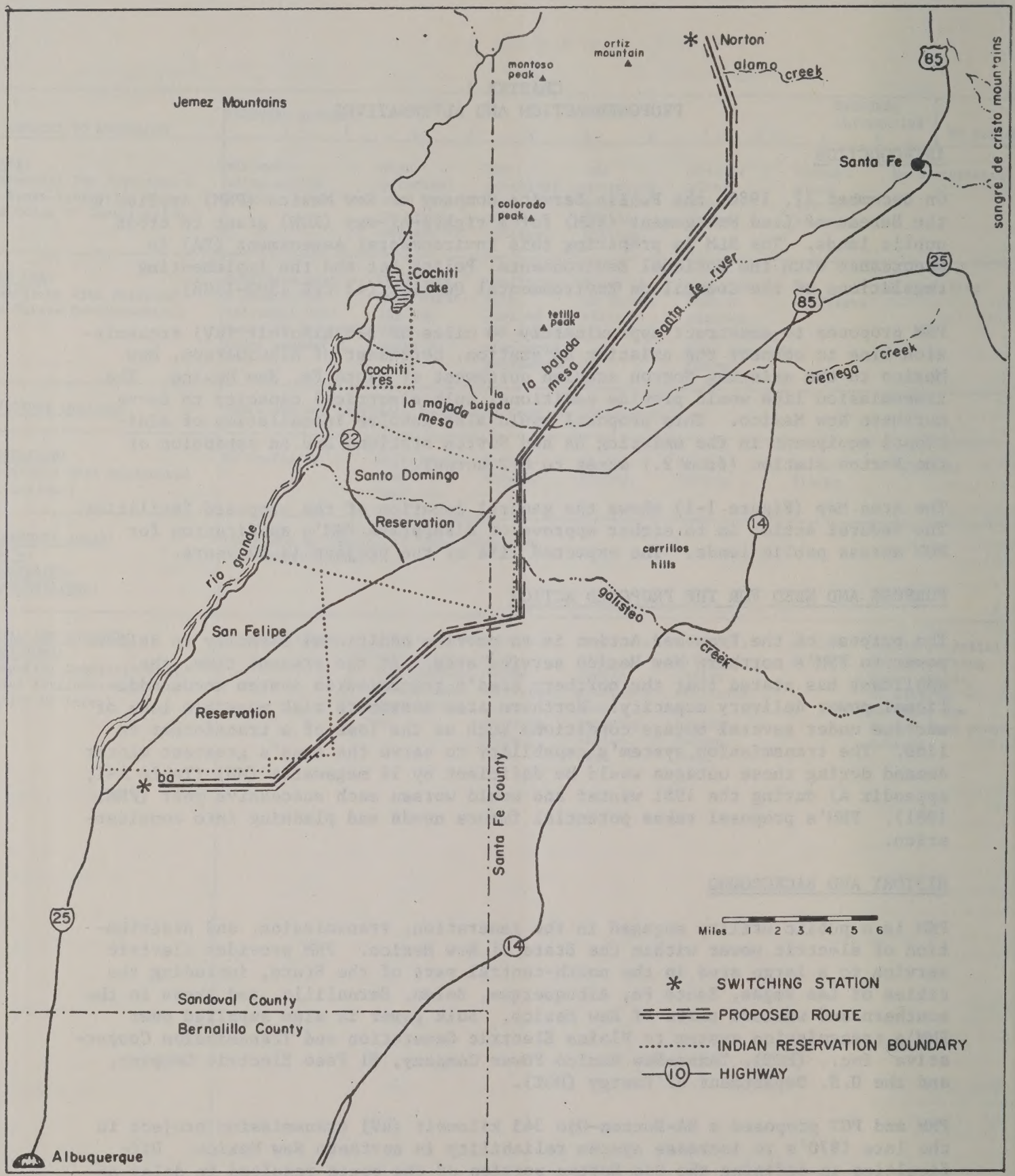


FIGURE I-1

PNM PROPOSED BA STATION TO NORTON STATION 345kV TRANSMISSION PROJECT AREA MAP

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

EXISTING FACILITIES

- TRANSMISSION LINES
- STATION
- GENERATING STATION

ROUTE ALTERNATIVES

- PROPOSED
- OTHER SEGMENTS

ROUTE 1 B,C,U,E,G,P,H

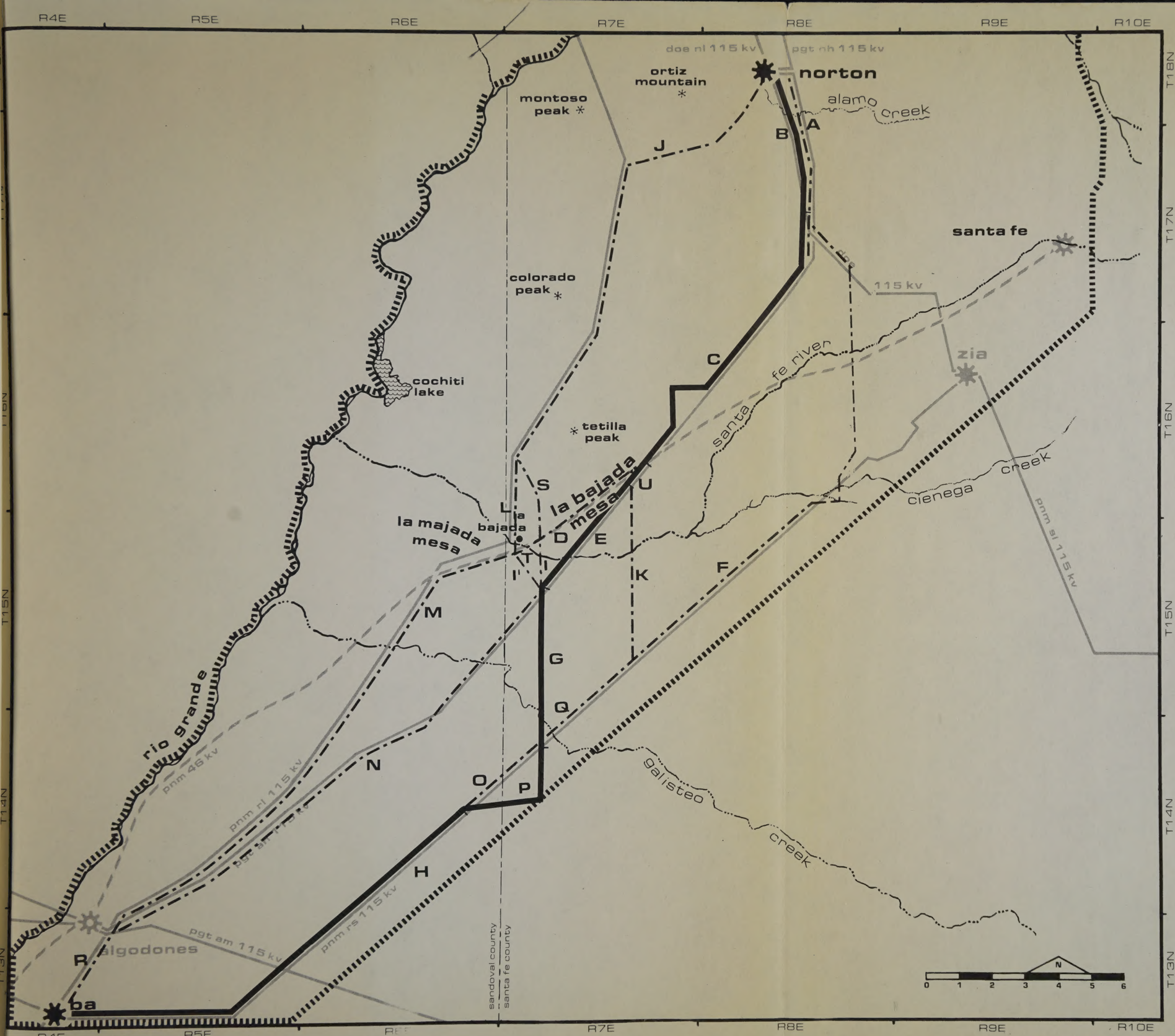
ROUTE 2 B,F,Q,P,H

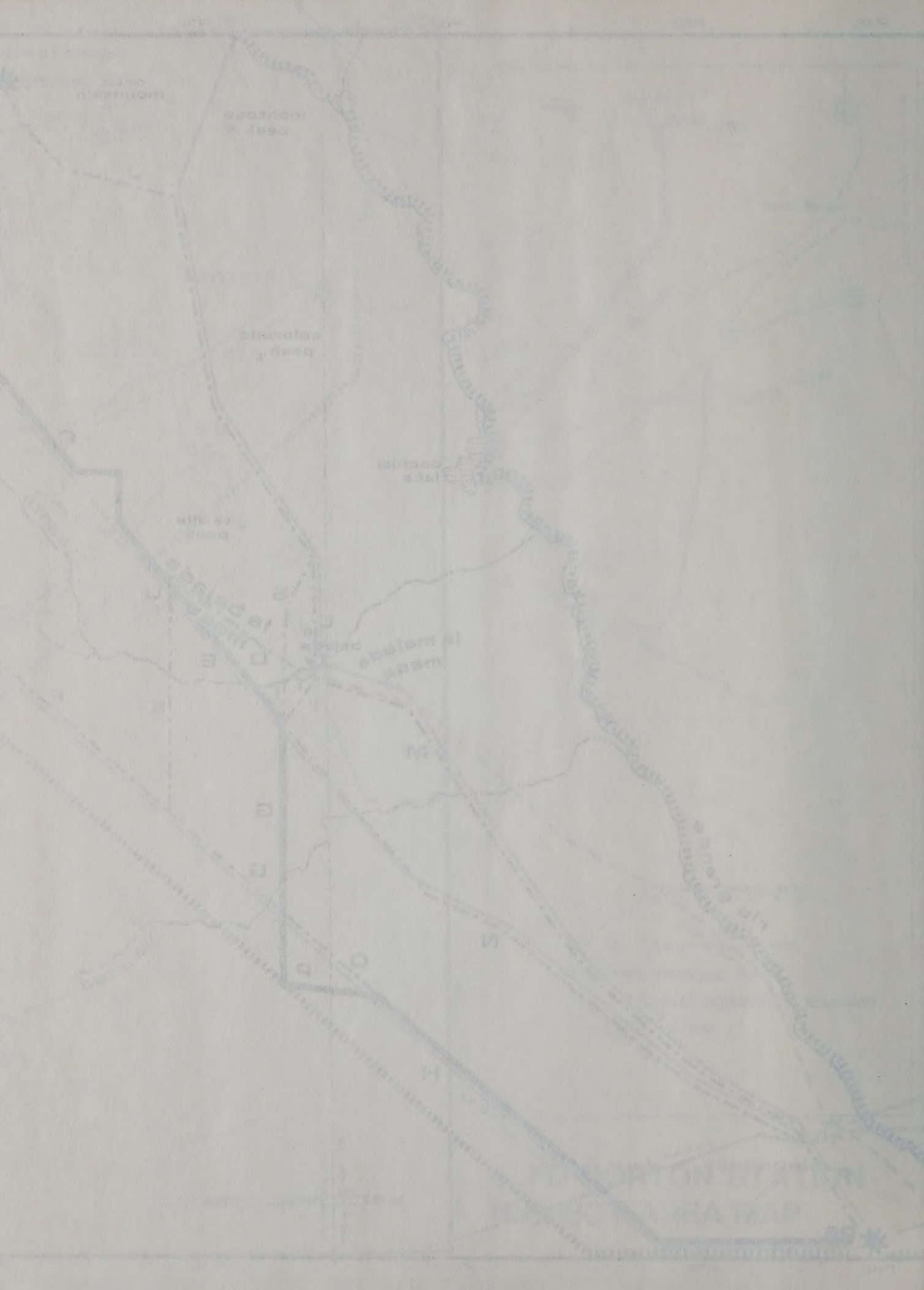
ROUTE 3 J,L,M,R

ROUTE 4 B,C,D,T,M,R

ROUTE 5 B,C,U,E,N,R

ROUTE 6 B,C,U,K,Q,P,H





the project. PNM and PGT determined that the BA-Norton-Ojo 345 kV transmission project should be separated into two projects. The BA-Norton portion (BA-N) would be constructed and operated solely by PNM and the Norton-Ojo portion would be constructed and operated solely by PGT. PNM informed the BLM of the intention to split the BA-Norton-Ojo 345 kV transmission project into two individual projects in December 1980 and consequently amended their original application. BLM determined that processing these ROW applications separately would be appropriate. An EA or EIS will be prepared at a future time for the Norton-Ojo project, if and when PGT makes application for those ROW.

PROPOSED ACTION

PNM proposes to construct approximately 40 miles of 345 kV transmission line to connect the existing BA station, northeast of Albuquerque, New Mexico to the existing Norton station northeast of Santa Fe.

The following project components, including construction, operation and maintenance were considered in the environmental analysis. The location of the Proposed Action (and alternatives) are shown on the Existing Facilities and Route Alternatives Map.

The Proposed Action consists of the following components:

1. Approximately 35 miles of single-circuit 345 kV transmission line; 169 "H-frame" structures would be needed to support the line.

2. Approximately 5 miles of double-circuit 345 kV transmission line structures; 25 steel lattice structures would be used for this part of the line.

3. A grounding system.

4. Installation of one 345 kV circuit breaker and 6-345 kV motor-operated switches at the existing BA station.

5. Expansion of the existing Norton station from 2.7 acres to 8.2 acres.

6. Installation of a 345/115 kV, 400 MVA transformer, a 345 kV disconnect switch, and a 75 foot tall 345 kV steel line termination structure at the expanded Norton station.

7. Construction of approximately 7.6 miles of new access road. Total access road needs (including existing roads) are approximately 41.3 miles.

8. Use of approximately 14 pulling and tensioning areas along the route. Each would be 50 feet by 200 feet.

9. Use of one 20 acre storage area, most likely located near a rail-head.

The Proposed Action would parallel about 33.7 miles of existing transmission line. In areas where existing lines are paralleled, the ROW would be 125 feet wide in order to allow sufficient distance between lines for maintenance and safety. Along the remaining 6.7 miles where lines are not paralleled, the ROW would be 100 feet wide.

CONSTRUCTION METHODS

The sequential steps of construction and operation are common to any route. To simplify the narrative in this EA a complete description of the construction of a 345 kV single-circuit line is provided, followed by a summary of the construction of a double-circuit system (the summary of the double-circuit portion focuses only on differences from the single-circuit construction).

The following description of line and structure construction is followed by a description of construction activities at the substations (specific details of construction methods are available in BLM files in Santa Fe, New Mexico).

The BLM would require the applicant to prepare a construction/operation plan which would contain stipulations and construction methods on public lands. The Forest Service would require a similar plan for lands under their jurisdiction. BLM also prepares a compliance/monitoring plan (see Appendix D).

Single-Circuit 345 kV System

Construction of the proposed single-circuit 345 kV transmission line would follow a sequence of survey, ROW clearance, access road construction, structure assembly and erection, conductor and shield wire stringing, tensioning, ground system installation and site restoration. Equipment required for these actions are shown on Table A-2.

ROW Clearance

Clearing of the ROW would be limited to the topping or removal of large trees under or near the conductors, to allow clearance according to National Electric Safety Code (NESC) standards. Trees that could affect the lines during wind-induced line swing would also be topped or removed. The number of passes through the ROW would be limited to clearing for safety purposes and to allow a small caterpillar to pass through the ROW to pull a sock line.

Access Road Construction

New access roads (temporary unpaved roads) would be bladed with a caterpillar tractor. Vegetation would usually be removed and the roadway leveled. Access roads would normally be 14 feet in width and usually within the ROW.

Structure Assembly and Erection

The 345 kV single-circuit structures would be individually assembled at each of the 169 structure locations. The structures would be concrete or tubular steel H-frame structures (see Appendix A, structure details) between 95 and 115 feet tall; poles would be 20 to 26 feet apart. The diameter of the poles at the base would be 26 inches and they would be sunk in the ground approximately 14 feet. An average of 4 structures per mile (average span 1,350 feet) would be required.

To assemble and erect each structure a 100 x 150 foot area would be required. The structures would be assembled by a crew at each site and, once assembled,

the structures would be erected by crane and placed into the holes previously dug by a digger drill. The holes would be backfilled and tamped, and any excess soil material would be spread in the area.

Conductor and Shield Wire Stringing

Each phase would consist of two subconductors, horizontally arranged. Dampers would be used to control wind vibrations. A design allowing for a minimum of 28 feet ground clearance at maximum conductor operating temperature which exceeds NESC requirements would be used. Greater clearances above the minimum NESC standards would be used over highways and railroads. The mimimum clearance over a highway would be 43 feet at 60 degrees farenheit. Shield wires would be treated stranded steel.

Reels of conductor and shield wire would be brought to the structure site by truck. Stringing would be done by first threading a sock line from one structure to another, A small tractor would usually pull this line down the center of the ROW. In extremely rough terrain this could be done by helicoptor and hand crews.

Tensioning

Tensioning would be done by machines which would move by the access roads from one tensioning site to the next. Each pulling and tensioning site would require two 20 by 40 foot areas, the total disturbed area for this operation would be about 200 by 50 feet; however, only the two 20 by 40 feet areas would generally be cleared and graded to level. Subconductor spacers would be placed on the line by a lineman riding in a self-propelled electric cart which would travel on the lines.

Grounding System Installation

A ground system would be installed in areas of high ground resistance to minimize the potential for induced voltages. This would entail driving a series of ground rods adjacent to the poles approximately 20 feet into the ground.

Where ground rods could not be used because of rock, a ground wire would be buried in each direction from the structure for about 30 feet, to a depth of 6 to 12 inches.

Site Restoration/Cleanup

Waste and scrap materials would be removed from the ROW to local landfills according to local regulations and agreements with the landowner/manager.

Lands disturbed by heavy equipment and trucks would be restored; deep cuts and holes would be filled or graded. All areas around structures would be graded to within 5% of original grade.

Damage to existing bridges, culverts, driveways, or roads would be repaired. Temporary bridges and culverts along temporary access roads would be removed and these roads would be graded and planted to natural cover as required by the

landowner/manager. Excess soil from construction would be broadcast in the affected area, graded and reseeded according to agreements with the landowner/manager.

Double-Circuit 345 kV System

PNM proposes to build the first 5 miles of segment H, north out of the BA station on double-circuit towers to minimize future surface disturbance in the event a future transmission line servicing northeastern New Mexico is needed.

The construction sequence for the double-circuit system would be the same as previously described for single-circuit with the exception of tower assembly and erection.

Structure Assembly and Erection

The 345 kV double-circuit structures would be individually assembled at each of the 25 structure locations. The structures would be either lattice steel structures or tubular steel structures as shown in Appendix A, Structure Details.

The lattice steel structures, would have an average height of 140 feet (80 feet to the cross arms). The structures would cover a base area of from 625 to 900 square feet. Footings would be set in concrete which would be trucked to the site. Each of the 4 footings would be 2½ feet in diameter by 15 feet deep. The footings would be dug by truck-mounted digger drill. Assembly area would be approximately 150 square feet adjacent to the foundation.

The tubular steel structures would be 130 to 140 feet in height. The structures would be mounted on concrete footings 15 to 17 feet deep and 6.5 to 7 feet in diameter. An area of 100 by 150 feet would be needed to be cleared for each tubular steel structure.

In either case, the structures would be assembled and erected by a 75 to 90 ton crane.

BA Station Addition

The existing 13 acre BA station would have a 345 kV circuit breaker and 6 345 kV motor-operated switches added to the existing equipment. The existing station layout and the proposed additions are shown in Appendix A, BA Station Layout. Any additional equipment would be painted or galvanized according to the existing color scheme.

Norton Station Expansion

The expansion of the Norton station boundaries would provide the area necessary to accomodate the equipment for the termination of the Proposed Action. In addition, it would provide adequate room for facility expansion for potential future projects.

The new land parcel would bound the eastern boundary of the existing site and measure 450 by 600 feet (5.5 acres). (See Appendix A, Norton Station Layout.)

A 345 kV yard would be built on the new lot following clearing, grading, and covering with crushed rock. New equipment for the 345 kV yard would include:

Equipment	Number
345/115 kV, 400 MVA transformer	1
345 kV disconnect switch	1
75 foot tall 345 kV steel line termination structure	1

Additional equipment would also be required in the existing 115 kV yard. Four 115 kV circuit breakers and two 38 foot tall steel line termination structures would be required.

Up to ½ mile of existing road would be upgraded for access. It would be bladed to approximately 30 feet in width, leveled, and covered with crushed rock.

OPERATION AND MAINTENANCE

The ROW and access would be closed and revegetated as required by the landowner/manager. Patrol of the line would be by helicopter on a monthly basis. If a structure requires maintenance (i.e., tightening loose hardware, replacing damaged members, replacing broken insulators) it would be reached by helicopter or by existing access roads. Use of a highreach line truck and several pick-up trucks could be necessary. Should any maintenance requiring access to a structure on public lands be needed, the appropriate agency would be notified in advance, except for emergencies requiring immediate repair. In all cases, lands and fences would be restored as necessary.

CONSTRUCTION SCHEDULE AND WORKFORCE

Construction Schedule

Approximately 7 months would be required to build the project. Construction would proceed from the BA station to the Norton station. Table A-3, in Appendix A, shows the estimated construction schedule. The proposed start of construction is May 1, 1982, with completion by November 30, 1982.

Workforce

Construction of the BA-N line would be contracted. Peak employment for transmission line construction is estimated at 36 persons and occurs during the first half of the 5th month of construction (see Appendix Table A-4). The number of workers enlisted from the local labor force would depend on availability of qualified craftsmen at the time of construction. Table A-5 in Appendix A shows the total contract workforce required for line construction by work phase over the 7 month construction schedule.

SPECIFIC CONSTRUCTION MEASURES

The applicant has committed to a number of specific construction measures to minimize or avoid potential adverse effects. Impacts analysis assumed that these measures would be employed.

Preconstruction conferences with land management agencies, company officials, and construction supervisors would be held to achieve a mutual understanding of construction practices and stipulations.

Soils

Changes in landform characteristics would be minimized by confining construction grading to structure sites, staging areas, pulling sites, and the construction of access roads. Construction crews would not drive cross-country but would use only the access roads and turnout areas. Access roads would be closed and revegetated after construction is complete, as required by landowner/manager.

Graded areas would be regraded to within 5% of original grade or to a contour required by the line design when construction is complete. Soil would be replaced, harrowed, and reseeded as deemed necessary by the landowner/manager.

Water

Several specific construction measures would be implemented in areas of washes, arroyos, and rivers to lessen impacts to soils, vegetation, surface waters and runoff patterns. These measures include: use of ditches, culverts, and water bars to control runoff and erosion along temporary and permanent access roads; grading and revegetating disturbed areas and careful planning of stream crossings to minimize modification of channel hydraulics and the introduction of sediments and contaminants to stream channels.

Radio or Television Interference

If complaints about radio or television interference are identified as a result of the construction of the Proposed Action, these complaints would be investigated on a case-by-case basis to determine their validity, probable cause, and potential solution.

Vegetation

Existing access roads would be used wherever possible during the construction period to avoid damage to plant communities and changes in runoff patterns. When new roads are necessary and vegetation removal is required, selective routing of necessary roads would be employed wherever possible to minimize clearing requirements. The recovery of vegetative cover would be accelerated and the potential for erosion reduced by initiating a reseeding/revegetation program upon completion of construction.

Transportation

Construction activities requiring intermittent traffic interruption would be completed as quickly as possible. Safety procedures (e.g., flagmen, signs) would be followed to ensure safe, smooth traffic flow.

Roadway obstructions and safety hazards would be minimized during construction by installing overhead guard pole safety barriers over the highway, designed to prevent dropping the conductor during stringing and clipping operations. The barriers allow safe, uninterrupted traffic flow along roadways while conductor stringing operations are underway.

Potential traffic interference because of movement of construction equipment would be reduced by scheduling the movement of construction equipment during hours of light traffic flow.

Cultural Resources

PNM has entered into a Cooperative Memorandum of Agreement with the State Historic Preservation Officer to conduct a Class III survey of the ROW facilities, and access roads. PNM would not differentiate among the various land ownerships in Class III surveys, or any subsequent mitigation required by the State, Federal, Native American, or private interests involved in the project.

Where avoidance can be used for mitigation the following procedures would be followed:

1. Flagging of all archeological sites prior to construction.

2. Restricting vehicle travel to within the ROW except where terrain and archeological site locations prohibit.

3. Using existing roads for passage up or down the ROW for construction, whenever possible.

4. Locating transmission structures away from archeological sites.

5. Locating structures, stringing, and tensioning sites away from archeological sites.

6. During conductor or shield wire stringing, the lead line would be walked across an archeological site and pulled under tension to avoid disturbing the site.

7. A construction road plan would be prepared on plan and profile sheets for the BA-N line, indicating all structure locations by station and construction roads for access to the existing 115 kV ROW. Plan and profile sheets would indicate where archeological sites are located (near or on ROW) and construction roads would avoid these sites.

8. An archeological survey would be performed if the contractor requires additional new access to a section of line. If new archeological sites are discovered on the new access roads, an addendum to the archeological avoidance plan would be submitted, stating mitigation to be performed prior to use.

9. An archeologist would be assigned during the construction of access roads, construction roads, and structure sites to see that the avoidance plan is followed. A field inspector would check periodically during line construction for any violation.

If avoidance is not possible and further mitigation (as determined by landowner/manager) is warranted, all appropriate State, Federal, tribal, or local statutes which provide for excavation or collection of cultural materials, would be complied with.

ALTERNATIVES

The identification of alternatives to the Proposed Action was limited to a consideration of 5 Route Alternatives and the No Action Alternative. No other system alternatives would meet the stated needs for the northern area. The use of existing stations served to limit the consideration of alternatives to those which would serve these stations.

No Action Alternative

This alternative is defined as rejection of the ROW application. The No Action Alternative would not result in any construction activities.

Route Alternatives

The general project area and various routes were examined through the scoping process by site visits, and through individual consultation and coordination efforts with concerned agencies and public. These consultation and coordination efforts are further described in Chapter 4. As a result, a total of 20 route segments (segments of the Proposed Action included) were identified to avoid potential problem areas and conflicting land uses and plans. From these route segments, a large number of routes could be identified. However, a review of the various combinations led to the identification of 6 route alternatives, including the Proposed Action, (see the Proposed Action/Alternative Map) that represent a range of realistic combinations which would avoid 1 or more potential problems.

The following factors were used as the basis for identification of the 6 route alternatives to receive further analysis in this EA:

-paralleling existing transmission routes
-avoiding conflicts with existing land uses
-avoiding potential conflicts with land use plans
-minimizing visual resource conflicts
-avoiding areas containing Threatened and Endangered Species
-availability of existing access

A description of the differences of the 6 selected route alternatives follows. Each of the 6 route alternatives is defined as a combination of segments designated by letter symbols (Figure 1-2). Table 1-1 shows comparative land requirements for these route alternatives.

Table 1-2 shows the ownership status of lands along each route.

Table 1-3 shows the number of miles paralled by other transmission corridors.

TABLE 1-1
ROUTE ALTERNATIVE LAND REQUIREMENT SUMMARY TABLE

	Proposed Action	Alternative Routes				
Miles of ROW	1	2	3	4	5	6
Miles of ROW[a/]	40.4	43.4	38.1	37.6	37.0	40.5
Miles of existing road	33.7	41.0	32.6	37.0	37.0	32.9
Miles of new road	7.6	2.7	6.3	0.7	0.0	8.7
Acres disturbed for road development	12.6	4.6	10.7	1.2	0.0	14.8
Acres of storage needed	20	20	20	20	20	20
Number of structures[b/]						
double-circuit[c/]	25	25	0	0	0	25
single-circuit[d/]	169	179	179	178	174	172
Total	194	204	179	178	174	197
Number of tensioning areas[b/]	14	15	12	13	12	14
Acres for tensioning areas[c/]	3.2	3.3	2.9	2.9	2.9	3.2
Acres added to Norton station	5.5	5.5	5.5	5.5	5.5	5.5
Acres temporarily disturbedf/	94.6	93.5	93.1	81.1	78.8	96.1
Acres permanently disturbed[g/]	5.7	5.6	5.5	5.6	5.6	5.6
Acres within ROW	602	653	570	568.9	560.6	603.8

[a/] Miles of road needed assumed at 1.14 miles of new access per mile of ROW. Depending on topographic constraints road would probably be within the ROW.

[b/] Area or facilitiy would be within ROW.

[c/] Approximately 4.4 per mile.

[d/] Approximately 3.8 per mile.

[e/] Approximately 1 per 3 miles.

[f/] Disturbance associated with construction activities.

[g/] Disturbance for life of the project.

TABLE 1-2
ROUTE ALTERNATIVE LAND STATUS SUMMARY TABLE

Ownership	Proposed Action 1 miles(%)	Alternative Routes 2 miles(%)	3 miles(%)	4 miles(%)	5 miles(%)	6 miles(%)
Federal						
BLM	21.2(53)[a]	18.9(44)	0.8(2)	9.9(26)	11.6(31)	22.3(55)
Forest Service	2.3(6)	0(0)	19.8(52)	6.5(17)	2.3(6)	0(0)
Corps of Engineers	0.3(1)	0.6(1)	0(0)	0(0)	0(0)	0.6(2)
Indian	1.3(3)	1.3(3)	15.5(41)	15.5(41)	15.7(42)	1.3(3)
State	0.8(2)	0.8(2)	0(0)	0.8(2)	.8(2)	0.8(2)
Private	14.5(36)	21.8(50)	2.0(5)	4.9(13)	6.6(18)	15.5(38)
Total	40.4 (100)	43.4 (100)	38.1 (100)	37.6 (100)	37.0 (100)	40.5 (100)

[a] Percentages rounded.

TABLE 1-3
ROUTE ALTERNATIVE SUMMARY TABLE

Miles of Existing Corridor Paralled

Facility	Proposed Action 1	Alternative Routes 2	3	4	5	6
Miles of existing ROW	33.7	41.0	32.6	37.0	37.0	32.9
Miles not parallel to existing corridor	6.7	2.4	5.5	0.6	0	7.6
Total miles	40.4	43.4	38.1	37.6	37.0	40.5

Route 1 (Proposed Action)

Route 1 (segments B,C,U,E,G,P,H) would leave the BA station to the east and parallel existing lines until it neared the Santo Domingo Pueblo lands. It would parallel the Santo Domingo boundary for about three miles along the base of La Bajada Mesa, crossing U.S. Highway 85. Turning northwesterly and ascending the mesa parallel with an existing line, Route 1 would cross the Santa Fe River Canyon before preceeding to the Norton station.

Route 2

The southern half of Route 2 (segments B,F,Q,P,H) is the same as Route 1. Along the northern half, the line would ascend La Bajada Mesa, east of Route 1, then parallel U.S. Highway 85 for several miles before crossing the fringe of Santa Fe. Route 2 was identified by scoping participants because it avoids the major problems with the La Bajada escarpment, Pueblo lands and conflicts with a private land owner and potential subdivision.

Route 3

Route 3 (segments J,L,M, and R) would vary in its entirely from Routes 1 and 2. Route 3 would leave the BA station to the northwest crossing private and Indian lands across its southern half. It would go up La Bajada Mesa to the west of Route 1 and cross Forest Service lands to Norton station. Route 3 for about the last eight miles to the Norton station would not parallel existing utilities.

Route 3 was identified because it was the furthest distance away from development and use zones near Santa Fe, and avoids conflicts with residences. In addition it avoids the La Bajada escarpment area, the potential subdivision and conflicts with a private landowner.

Route 4

The southern half of Route 4 (segments B,C,D,T,M,R) is the same as Route 3, while the northern third is the same as Route 1. The ascent of La Bajada would be east of Route 3 and west of Route 1. Route 4 was identified because it was one of the most direct routes. The majority follows existing ROW's, it would also have a less noticeable crossing of La Bajada and it is the furthest distance from Highway 85.

Route 5

Route 5 (segments B,C,U,E,N,R) is similar to Routes 1, 3 and 4. The line would be located across the Santo Domingo and San Felipe Pueblos east of Routes 3 and 4 and be common to Route 1 from La Bajada north to Norton station. Route 5 also represents one of the most direct route and parallelling Interstate 25 for less miles than Route 4. In addition, it avoids the village of La Bajada.

Route 6

Route 6 (segments B,C,U,K,Q,P,H) is similar to Route 1 with the exception that La Bajada Mesa would not be paralled along the base and the crossing of U.S. Highway 85 would be on top of the mesa rather than across its base. Segment K would require new access for its entire length, across fairly level ground. This access would probably be within the ROW. Route 6 was identified because it avoids potential conflicts with La Bajada escarpment, a potential subdivision, and the Indian pueblo lands. It also avoids the urbanizing areas of Santa Fe and is a less obvious crossing of Highway 85.

AUTHORIZING ACTIONS

Bureau of Land Management

The BLM would issue ROW in accordance with Regulations Pertaining to Rights-of-Way for Power Transmission Lines (43 CFR 2850). The Proposed Action would require approximately 21 miles of ROW across public lands. The BLM would also issue Temporary Use Permits (TUPS) for temporary work and storage sites. The New Mexico State Director has authority to issue all initial grants and permits

necessary to allow construction across these public lands. TUPS (43 CFR 2920) would be issued on a case-by-case basis as the sites needed for storage or temporary work are identified.

Other Federal Agencies

The Forest Service would issue ROW for any lands under their management which would be crossed. Other Federal lands crossed could include lands administered by the Corps of Engineers and Bureau of Indian Affairs (San Felipe and Santo Domingo Pueblos). Routes 1, 3, 4, and 5 would cross Forest Service lands.

State of New Mexico

The New Mexico State Highway Department and the State Land Office would also need to issue ROW or easements to cross State lands. Approximately 1 mile of State lands would be crossed on Routes 1, 3, 4, 5, and 6.

Other Local Agencies

Santa Fe County may require a Development Permit before construction under the authority of the Santa Fe County General Plan and Land Development Code adopted October 28, 1980.

INTERRELATIONSHIP WITH EXISTING ENVIRONMENTAL DOCUMENTS

The Proposed Action does not conflict with the Management Framework Plan 3 Decisions for the Rio Grande Planning Unit. In addition, the following documents have been used in the preparation of this environmental assessment. These documents are on file at the BLM Albuqueruqe District Office.

Public Service Company of New Mexico, (1976). Ojo-Norton-North Bulk 345 kV Transmission System Environmental Analysis.

_____, (1981). Proposed BA Station to Norton Station 345 kV Transmission Project Environmental Analysis.

David E. Miller, (1976). The Route of the Dominguez-Escalante Expedition, 1776-77.

County of Santa Fe, (1980). Santa Fe County General Plan and Land Development Code.

Bureau of Land Management, (1979). Environmental Assessment for WW-BA 345 kV Transmission Project (EA #NM-011-80-89).

Wirth Associates, (1981). BA-Norton 345 kV Transmission Project Visual Resource Assessment.

Chapter 2
AFFECTED ENVIRONMENT

This Chapter describes the affected environment for the Proposed Action and each Alternative. The level of detailed discussion is commensurate with the anticipated level of impacts.

This Chapter is organized with a discussion of the affected environment by Route Alternatives. Impacts from the Proposed Action and Alternatives were analyzed for all of the following resources:

- Climate
- Air Quality
- Geology
- Mineral Resources
- Paleontology
- Soils
- Water Resources
- Vegetation
- Wetlands
- Floodplains
- Wildlife
- Livestock Grazing
- Threatened or Endangered Species
- Prime and Unique Farmlands
- Visual Resources
- Cultural Resources
- Noise
- Land Use
- Recreation
- Wilderness Resources
- Areas of Critical Environmental Concern
- Transportation Networks
- Social and Economic Concerns

After analysis of the results of scoping and consultation with appropriate Federal, State, and local agencies, negligible or no impacts were found for the following resources.

- Climate
- Air Quality
- Geology
- Water Resources
- Wetlands
- Floodplains
- Livestock Grazing
- Threatened or Endangered Species
- Prime and Unique Farmlands
- Noise
- Wilderness Resource
- Areas of Critical Environmental Concern
- Transportation Networks

ROUTE 1 - SEGMENTS B,C,U,E,G,P,H (PROPOSED ACTION)

(Expansion of the Norton station, which is common to all routes, is addressed under this route.)

Minerals

There are uranium prospecting permit applications currently pending on La Bajada Mesa in the vicinity of the north rim of the Santa Fe River Canyon along segment E. There is also an inactive open pit uranium mine within the Canyon. Because of economic factors, it is not expected that uranium mining would occur in the next 5 years. The uranium veins are overlain by a basalt cap and most feasibly would be developed by underground mining.

Paleontology

Potential fossil occurrences, such as Mesozoic shark teeth, fossil plants, and fossil vertebrates, are most likely to be found in the Galisteo Formation and the Santa Fe Group.

A map showing areas of Potential Paleontological Resources is in Appendix B. Areas of moderate potential to encounter paleontological resources are found along route segment H, beginning about 2 miles from the BA station, continuing along this route segment its remaining distance. Other areas that may have potential are located along segment E as it ascends La Bajada Mesa and as it crosses the Santa Fe River. The last half mile of segment B also has limited potential to contain paleontological resources.

Soils

Factors affecting the potential for erosion include rainfall, degree of slope, length of slope, texture, coarse fragments, infiltration and vegetative cover. Erosion potentials for all routes and component segments are indicated on the Soil Association and Potential Erosion Map in Appendix B. Sediment yield data was used as an indicator of potential erosion.

Soil associations found along the routes are also indicated on the above mentioned map. (For descriptions of these associations see the Ojo-Norton-North Bulk Environmental Analysis, Public Service Company of New Mexico, 1976.)

Vegetation

Five plant communities would be crossed by Route 1. The Plant Communities/ Reclamation Potential Map in Appendix B illustrates the location of each segment and the plant communities crossed. Appendix C, Table C-1 indicates the number of miles by plant community that would be crossed for each segment. Table 2-1 indicates by route the number of miles of plant communities crossed. (Detailed descriptions of each plant community can be found in the Ojo-Norton-North Bulk Environmental Analysis, Public Service Company of New Mexico, 1976.)

The La Bajada Mesa escarpment along segment E affectively separates Route 1 into 2 rainfall regimes. The northern segments B,C,U, and part of E receive average annual precipitation between 12 and 14 inches, while those segments south of La Bajada receive between 8 and 10 inches per year. Precipitation over the entire route occurs in the form of summer thunderstorms between early July and late September. These thunderstorms result in heavy localized water runoff.

The following discussion of plant communities relates to their reclamation potential.

Pinon-Juniper

An isolated pinon-juniper community occurs along segment C. Climate affects relative densities and species composition in this community as in grasslands, but the variations are modulated since the climate is more predictable. The dominant plants are pinon and one seed juniper. Pinon-juniper communities provide approximately 12 AUM's per section. Because of the relative high rain fall associated with pinon-juniper communities, revegetation of the understory should establish itself relatively quickly (between 3-5 years). However, re-establishment of pinon trees could take up to 100 years.

Juniper-Grassland

This community is the most extensive at elevations from 5000 to 6000 feet along segments B,C,P, and H, and provides between 8-12 AUM's per section. Revegetation of understory grasses along the northern segments of B and C should take between 3-5 years while reestablishment of juniper trees could take up to 100 years; however, revegetation along southern portions of segments P and H would be more difficult and could take 5-10 years for grasses and shrubs.

Grassland

Grassland communities occur primarily on La Bajada Mesa along section E. Small pockets of grasslands are also found on level mesas east of I-25 and near NM-22, along section C,U, and E. Grassland communities provide 6-8 AUM's per section.

Revegetation of segments B,C,U, and E should take betweeen 3-5 years; however, revegetation along southern portions of segment H may be more difficult, and require 5-10 years to recover.

Riparian and Minor Riparian Habitats

Riparian habitats occur primarily along segments E and G on the floodplains of the Santa Fe River and Galisteo Creek. Minor riparian habitats occur along arroyos throughout Route 1. All segments (except P) cross this plant community. Approximately 75% of segment B parallels the Canada Ancha arroyo which supports minor riparian habitat. Minor riparian and riparian habitat are typically productive areas and used extensively by livestock and wildlife. Because of the moist microclimate associated with riparian and minor riparian areas restoration of ground cover would occur within 2-6 years of disturbance. Climax species would take 5-50 years to fully recover.

Cliffs and Talus Slopes

This community occurs in small, scattered, isolated enclaves on segment E along La Bajada Mesa and White Rock Canyon. Species composition in each enclave differs markedly from the surrounding areas. Some species are restricted or nearly restricted to such habitats. This area is extremely difficult to reclaim because of the steep slopes and rocky and infertile soils.

TABLE 2-1
MILES OF VEGETATIVE COMMUNITY CROSSED BY ROUTE

Routes	Plant Community					
	Pinon Juniper	Juniper Grassland	Grassland	Riparian	Cliffs and Talus Slope	Total
1	1	29.7	7.7	2.0	a/	40.4
2		37.9	4	1.5	a/	43.4
3	9.0	19.4	6.7	3.0	b/	38.1
4	2.3	23.8	9.6	1.9	b/	37.6
5	1	25.3	8.5	2.2	b/	37.0
6	1	31.6	6.2	1.7	a/	40.5

a/ Assumes plant community will be spanned.

b/ Assumes tower will be located within plant community.

Wildlife

Consultations with FWS indicated that there would be no impacts to Threatened or Endangered Species. The plant communities previously described in turn determine which animals inhabit the area. The vegetative communities and the route segments of the Proposed Action (Route 1) which traverse these communities are described in the Vegetative section and illustrated in Appendix B Plant Communities/Reclamation Potential Map. A comprehensive species list for these vegetative communities is available at the Albuquerque District Office. All 5 of the vegetative communities are traversed by Route 1. Of most importance to wildlife are the pinon-juniper, riparian, and cliff or talus slope communities. Table 2-2 presents the miles of transmission line and acres of expected disturbance involved for those segments crossing these important wildlife habitats. Where these areas occur on the segments can be viewed in Appendix B, Vegetation Map.

Pinon-Juniper

This community supports fauna species common to grasslands, juniper-grasslands and pine forest communities, and therefore supports a greater diversity of species. This community provides important habitat as a wintering area for deer, raptors, jays and passerine birds.

Riparian

Riparian habitats typically provide key requirements for more mobile species occupying the immediate areas. The areas potentially traversed by the proposal are identified in the vegetation section. Quail and mourning doves are game species that may be expected to utilize both minor riparian and riparian habitats on a seasonal basis. Quail may be expected to use the areas for winter roosting sites and spring nesting. Mourning doves use the area for spring and fall roosting sites and some spring nesting. Mule deer may also use these areas on a limited intermittent basis during overwintering and migration activities.

Cliffs and Talus Slopes

The escarpment of La Bajada and the enclaves of Santa Fe River Canyon along segment E provide habitat for a diverse group of animal species. Species include rock squirrels, jays, bank swallows, cliff swallows, canyon wrens, rock wrens, tree lizards, collared lizards, and black-tailed rattlesnakes. In addition, many areas along the escarpment offer potential nesting habitat for prairie falcons. Information concerning falcon nesting is lacking for this area.

TABLE 2-2
ROUTE 1 SEGMENTS OCCURING ON IMPORTANT WILDLIFE HABITAT

Segment	Pinon-Juniper		Riparian		Cliffs and Talus Slopes	
	Miles	Acres	Miles	Acres	Location Description	Disturbance Expected (Acre)
C	1.0	1.6	.2	.3		
E			.5	.8	Escarpment Santa Fe River Canyon	.7 No
G			.3	.5		
H			1.0	1.6		
Total	1.0	1.6	2.0	3.2		.7

Segment E comes within 1 mile of a reported eagle nest (BLM, 1975). It is not known if nest is active. In connection with this EA an evaluation of the habitat and informal discussion with FWS suggests that it is a potential golden eagle nest.

Cultural Resources

Cultural remains in the central Rio Grande valley represent a broad range of cultural resources through a continuum of 12,000 years. The cultural and historic aspects of the middle Rio Grande valley were synthesized recently in a cultural resources overview for the Albuquerque District of the BLM and the FS Southwest Region (1979). Major periods in the area include the Paleo-Indian, Archaic Pueblo and Historic Periods. While a great deal is known about this region, only a small part has been formally surveyed.

Table 2-3 provides a summary of known site information, based on the file of the New Mexico Laboratory of Anthropology. Potential for sites to be present is extrapolated from known data and professional judgement. No known sites are of National Register quality along Route 1.

TABLE 2-3
PROXIMITY OF KNOWN AND UNKNOWN SITES TO ROUTE 1

Segment	200 Feet	200 Feet to ½ Mile	Potential
B	0	0	Moderate/Low
C	0	0	Low
U	0	0	Low
E	0	3	Moderate
G	1	5	Moderate
P	0	0	Moderate
H	0	0	Moderate/Low

Visual Resources

A visual resource assessment utilizing BLM's Visual Resource Inventory and Evaluation and Visual Resource Contrast Analysis 8486 Manuals was conducted by Wirth Associates (see BA-Norton 345 kV Transmission Project Visual Resource Assessment Report). Table 2-4 shows number of miles through each activity class.

The scenic quality of Route 1 is generally classified as having low scenic value (class C scenery); however, segments C, E, and G contain isolated areas of medium scenic value (class B scenery). La Bajada escarpment is the major topographic feature in this area. Approximately 1 mile of segment E crosses Santa Fe Canyon which has a high scenic value (class A scenery).

Visual sensitivity is primarily a function of user attitudes, number of viewers, and visibility. Approximately 8 miles of route 1 (segments C, E, and G) cross areas which have a high visual sensitivity. The balance of the route crosses areas of moderate or low visual sensitivity.

TABLE 2-4
APPROXIMATE MILES OF ROUTES THROUGH EACH CLASS

	Scenic Quality Class				Visual Sensitivity Class		
	A	B	C	Total	High	Moderate	Total
Rt. 1	1.0	7.8	32.6	40.4	8	32.4	40.4
Rt. 2		6.5	36.9	43.4	18	25.4	43.4
Rt. 3		2.5	35.6	38.1	12	26.1	38.1
Rt. 4		3.6	34.0	37.6	10	27.6	37.6
Rt. 5	1.0	3.5	32.5	37.0	10	27.0	37.0
Rt. 6	1.0	5.0	34.5	40.5	7	33.5	40.5

Land Use

Current land use along the Route 1 is generally rural with grazing the predominant land use. Along segment C an operating scoria pit is skirted.

The potential development area of the Los Atrevidos subdivision would be crossed by the lower portion of segment E and bounded by a portion of segment G.

This proposed subdivision has received concept approval from Santa Fe County. Plans for this approximately 1000 acre development include low density residential (40 acre) lots, a travelers service complex and a mobile home park with 200 to 250 spaces. The ultimate population for this development would be 800-1000 people.

Recreation

No designated recreation areas are located along Route 1. A variety of dispersed recreational pursuits occur throughout the area including target shooting, off road vehicle use, woodgathering, and sightseeing. Recreation use is low.

Social and Economic Conditions

The area of potential impact to social and economic conditions includes Santa Fe, Sandoval and Bernalillo counties. Major urban centers are Albuquerque and Santa Fe, with a secondary center in Bernalillo.

The city of Albuquerque has a population exceeding 300,000 while Santa Fe's population is approaching 50,000. Within the suburban and rural areas between Albuquerque and Santa Fe an additional 20 to 30 thousand people reside.

The economy of the area is diverse with major components including light industry, government, and tourism.

Temporary housing is readily available in Albuquerque and somewhat tighter in Santa Fe, particularly during the summer tourist season.

The area also includes the Santo Domingo and San Felipe Pueblos in Sandoval county. The two-Pueblo area has a population greater than 5,000 according to the 1980 Census Preliminary Population and Housing Unit Counts.

The economies of the Pueblos include grazing, trade goods, and limited tourism components. An increasing number of Pueblo members are commuting into surrounding communities for work. Indian attitudes have been expressed concerning the sacredness of the land and the desire to protect it from degradation.

ROUTE 2 - SEGMENTS B,F,Q,H,P

NOTE: Discussion of the affected environment for the alternative routes is not repeated if it is consistent with that for the proposed action.

Vegetation

Of the 6 plant communities found along the proposal, Route 2 does not cross the pinon-juniper plant community nor would a structure be located within the cliffs or talus slopes habitat. Miles of plant communities crossed is shown on Table C-1 Appendix C.

Wildlife

Table 2-5 portrays the important habitats which would be affected. (See Appendix B Plant Communities/Reclamation Potential Map for specific location.)

TABLE 2-5
ROUTE 2 SEGMENTS OCCURING ON IMPORTANT WILDLIFE HABITAT

Segment	Pinon-Juniper		Riparian		Cliffs and Talus Slopes	
	Miles	Acres	Miles	Acres	Location Description	Disturbance Expected
F	0	0	.5	.8	Escarpment	No
H	0	0	1.0	1.6		
Total	0	0	1.5	2.4		

Cultural Resources

Table 2-6 indicates known sites and potential for unknown sites along Route 2.

TABLE 2-6
PROXIMITY OF ROUTE 2 TO KNOWN AND UNKNOWN SITES

Segment	Less than 200 Feet	200 Feet to ½ Mile	Potential
B	0	0	Moderate/Low
F[a/]	1	15	High
Q	0	0	High
P	0	0	Moderate
H	0	0	Moderate/Low

a/ Segment F may pass within ½ mile of sites eligible for National Historic Register inclusion.

Visual Resources

The majority of route 2 is also C scenery, however, B scenery characterized by undulating terrain is crossed on segments F and Q. Approximately 15 miles of this route (segments F,Q,H) cross areas of high sensitivity, primarily due to the proximity to major transportation routes.

Land Use

Portions of segment F cross through the urbanizing outskirts of Santa Fe. This segment passes within ¼ mile of up to 100 homes. This area has been identified by the City of Santa Fe as the next logical area for residential development. This area is within the Extraterritorial Zone which is jointly administered by the City and County through the Extraterritorial Zoning Commission. Santa Fe County has also identified this area as a preferred development zone. Segment F would cross or be adjacent to several existing or planned developments in this area.

Recreation

Route 2 would be located adjacent to the Santa Fe Country Club. Facilities available at the Club include a golf course, tennis courts, and club house.

ROUTE 3 - SEGMENTS J,L,M,R

Paleontological Resources

Route segment R has limited potential to contain paleontological resources, as does about 3 miles along the lower portion of segment M. Segment J, as it ascends La Bajada Mesa also has limited potential.

Wildlife

Route 3 would traverse the greatest amount of the pinon-juniper community. Table 2-7 presents pertinent data for the important habitats affected by this route (see the Plant Communities/Reclamation Map in Appendix B for specific location).

TABLE 2-7
ROUTE 3 SEGMENTS OCCURING ON IMPORTANT WILDLIFE HABITAT

Segment	Pinon-Juniper		Riparian		Cliff and Talus Slopes	
	Mile	Acres	Mile	Acres	Location Description	Disturbance Expected
J	9.0	19.0	1.0	1.6	Canada Ancha Escarpment	.7 Yes
L	0	0	.5	.8		
M	0	0	1.5	2.3		
Total	9.0	19.0	3.0	4.7		.7

In addition, there is a small wild horse herd in the Montoso peak area that may on occasion use areas traversed by the northern part of segment J of this route. The pinon-juniper which is crossed by segment J of this route is of the greatest importance to wintering deer, jays, raptors, and other passerine birds. This route is well removed from the possible eagle nest previously discussed.

Cultural Resources

Table 2-8 indicates known sites and potential for unknown sites along Route 3.

TABLE 2-8
PROXIMITY OF ROUTE 3 TO KNOWN AND UNKNOWN SITES

Segment	Less than 200 Feet	200 Feet to ½ Mile	Potential
J	7	3	High
L	1	0	High
M	1	6	High
R	0	0	High

Segment M may pass within ½ mile of sites eligible for the National Register of Historic Places.

Visual Resources

Only isolated areas on segment J and L contain medium scenic values. In addition, approximately 2 miles of high visual sensitivity are crossed on segments J, and L, plus approximately 4 miles of segment M, where it parallels Highway 85.

Land Use

Route 3 crosses across the Santo Domingo and San Felipe Pueblos on route segment M. Information about specific land use plans are not known for these lands. However, recent history indicates that gaining ROW across the Pueblos may be complex. The Pueblos have often expressed the view that the land is sacred, and that development using their land for the benefit of others should be limited.

Segment R crosses through the semi-rural community of Algodones with scattered residents and limited irrigated agriculture in the area.

ROUTE 4 - SEGMENTS B,C,D,T,M,R

Minerals

Segment D would cross La Bajada Mesa on the north side of the Santa Fe Canyon and could conflict with uranium prospecting permits.

Paleontological Resources

The ascent of La Bajada Mesa along route D may contain areas having limited potential for paleontological resources.

Wildlife

Segment T of Route 4 crosses the Santa Fe River down stream of the escarpment where disturbance in the riparian zone is expected. Segment D of this route is well removed from the possible eagle nest which is within 1 mile of the proposed segment E. (See Plant Communities/Reclamation Potential Map in Appendix B.) The amount of important habitat disturbance is shown in Table 2-9.

TABLE 2-9
ROUTE 4 SEGMENTS OCCURING ALONG IMPORTANT WILDLIFE HABITAT

Segment	Pinon-Juniper		Riparian		Cliff and Talus Slope	
	Mile	Acres	Mile	Acres	Location Description	Disturbance Expected (Acres)
C	1.0	1.6	.2	.3		
D	1.3	2.0	.1	.2	Escarpment	.7
T			.1	.2		
M			1.5	2.3		
Total	2.3	3.6	1.9	3.0	Escarpment	.7

Visual Resources

Route 4 crosses approximately 2 miles of areas of medium scenic value on segments C, D, and M. In addition, approximately 7 miles of high visual sensitivity are crossed.

Cultural Resources

Table 2-10 indicates known sites and potential for unknown sites along Route 4.

TABLE 2-10
PROXIMITY OF ROUTE 4 TO KNOWN AND UNKNOWN SITES

Segment	Less than 200 Feet	200 Feet to ½ Mile	Potential
B	0	0	Moderate/Low
C	0	0	Low
D	0	0	Low
M	1	6	High
R	0	0	High

Segment M may pass within ½ mile of sites eligible for National Register of Historic Places.

Land Use

Route segment D would ascend La Bajada Mesa in very close proximity to the village of La Bajada.

ROUTE 5 - SEGMENTS B,C,U,E,N,R

Paleontological Resources

Segment N would cross areas just to the south of areas on Route 3's segment M with limited potential for paleontological resources.

Wildlife

The difference between the Proposed Action and Route 5 is limited to the location of the Galisteo Creek crossing. Table 2-11 summarizes the important habitats affected.

TABLE 2-11
ROUTE 5 SEGMENTS OCCURING ON IMPORTANT WILDLIFE HABITAT

Segment	Pinon-Juniper		Riparian		Cliff and Talus Slopes	
	Miles	Acres	Miles	Acres	Location Description	Disturbance Expected
C	1.0	1.6	.2	.3		
E	0	0	.5	.8	Escarpment Santa Fe River Canyon	.7 No
N	0	0	1.5	2.3		
Total	1.0	1.6	2.2	3.4		.7

Cultural Resources

Table 2-12 indicates known sites and potential for unknown sites along Route 5.

TABLE 2-12
PROXIMITY OF ROUTE 5 TO KNOWN AND UNKNOWN SITES

Segment	Less than 200 Feet	200 Feet to ½ Mile	Potential
B	0	0	Moderate/Low
C	0	0	Low
U	0	0	Low
E	0	3	Moderate
N	0	0	Moderate
R	0	0	High

Segment N has the potential to pass within ½ mile of site eligible for inclusion on the National Register of Historic Sites.

ROUTE 6 - SEGMENTS B,C,U,K,Q,P,H

Minerals

Segment K would cross areas of potential uranium development, (See the discussion for Route 1.)

Paleontological Resources

In addition to common areas previously described along Route 1, limited potential for paleontological areas occur along segment K as it crosses the Santa Fe River Canyon.

Wildlife

Ascent of the escarpment (segment Q) would not require tower placement in the cliff or talus slope community. Segment K comes within 1 mile of the possible eagle nest. Table 2-13 summarizes the important habitats affected.

TABLE 2-13
ROUTE 6 SEGMENTS OCCURING ON IMPORTANT WILDLIFE HABITATS

Segment	Pinon-Juniper		Riparian		Cliff and Talus Slope	
	Miles	Acres	Miles	Acres	Location Description	Disturbance Expected
C	1.0	1.6	.2	.3		
K	0	0	.5	1.6	Santa Fe River Canyon	No
H	0	0	1.0	1.6		
Total	1.0	1.6	1.7	3.5		

Cultural Resources

Table 2-14 indicates known sites and potential for unknown sites along Route 6.

TABLE 2-14
PROXIMITY OF ROUTE 6 TO KNOWN AND UNKNOWN SITES

Segment	Less than 200 Feet	200 Feet to ½ Mile	Potential
B	0	0	Moderate/Low
C	0	0	Low
U	0	0	Low
K	0	0	Low
Q	0	0	High
P	0	0	Moderate
H	0	0	Moderate/Low

Visual Resources

Route 6 crosses the Santa Fe Canyon (segment K) which is designated as high scenic value. Less than a mile of this segment crosses an area of high visual sensitivity.

Land Use

Route 6 would avoid the proposed Los Atrevidos subdivision.

CHAPTER 3
ANTICIPATED IMPACTS

The description of the Proposed Action and Alternatives (Chapter 1) outlined those actions the applicant has committed to, in order to help minimize adverse environmental impacts. This chapter describes what environmental impacts may be expected as a result of the construction, operation, and maintenance of the Proposed Action or Alternatives. The affect of the No Action Alternative has also been analyzed for each environmental element. Impacts are discussed by route and environmental component. Route 1 (Proposed Action) is discussed first. Only impacts which are different from those predicted for Route 1 are discussed for subsequent routes.

ROUTE 1 - SEGMENTS B,C,U,E,G,H,P (Proposed Action)

Minerals

There are no conflicts with active mineral resource developments. Segment E has possible future conflicts with potential uranium development on the north rim of the Santa Fe River Canyon. Development is not probable within five years. Due to the overlaying basalt cap, extraction would be by underground mining which should pose no major conflict with the Proposed Action.

Paleontology

Surface and subsurface paleontological resources can be disturbed or destroyed by surface disturbing activities such as access road construction and structure site clearing where outcroppings are encountered. This could result in a loss of scientific information associated with these resources. These impacts would occur primarily on segments E,G, and H.

Soils

Increased use of existing roads, construction and use of new roads and other construction related disturbance could increase erosion, sedimentation, and compaction, potentially decreasing soil productivity. Removal of vegetation due to these activities would expose the bare soil to increased erosion, particularly during heavy thunderstorms. The rate at which erosion decreases would in large part be determined by the reestablishment of vegetation.

The Summary Table indicates the approximate miles of high potential erosion along each route. (Also see Appendix B, Soil Association and Erosion Potential Map.) Areas with potential sediment yields approaching 3.0 (acrefoot/mile^2/year) may be considered to have a high potential for erosion. Approximately 24 miles along this route would cross areas where the erosion potential is high. There are no areas along the route with a very high potential for erosion (sediment yield greater than 3.0 (acrefoot/mile^2/year).

Due to the nature of the soils and the highly dissected topography and steep slopes along proposed segments H and B, soils along these segments may be particularly erodable. Segment G would also run across a highly disected area; however, the large amounts of coarse fragments and large numbers of outcrops found in these soils should slow erosion.

Vegetation

Although the construction, operation, and maintenance of the Proposed Action or Alternatives are not anticipated to have a major effect on any vegetative communities, certain areas along certain segments have been identified as being more difficult to reclaim. Surface disturbing activities may be catagorized into two types, temporary or permanent disturbance. Temporary disturbance of an area means the area would be cleared of vegetation. Unless otherwise specified by the landowner/manager, all temporarily disturbed areas would receive some reclamation treatment and some revegetation should occur either as a result of specific treatment or naturally. Permanently disturbed areas would be committed for the life of the project and revegetation would not occur. The acreage permanently disturbed does not vary signficantly by route. Table 3-1 shows the average of both temporarily and permanently disturbed areas by vegetation type for all routes.

TABLE 3-1
ACRES TEMPORARILY AND PERMANENTLY DISTURBED
ALONG EACH ROUTE BY PLANT COMMUNITY

	Routes						
Plant Communities	1	(Norton Station)	2	3	4	5	6
Pinon-Juniper	1.6 (T)**	(5.5)***	0.0	19.0 (.03)	3.6 (T)	1.6 (T)	1.6 (T)
Juniper-Grassland	77.0 (5.6)*		83.2 (5.6)	53.8 (5.5)	53.1 (5.6)	59.8 (5.6)	77.7 (5.6)
Grassland	12.1 (.02)		7.9 (.01)	14.9 (.02)	20.4 (.04)	13.3 (.02)	13.3 (.01)
Riparian	3.2 (T)		2.4 (T)	4.7 (T)	3.0 (T)	3.4 (T)	3.5 (T)
Cliffs-Talus Slope	.7 (T)		0.0	.7 (T)	1.0 (T)	.7 (T)	0.0
TOTAL	94.6 (5.7)		93.5 (5.6)	93.1 (5.5)	81.1 (5.6)	78.8 (5.6)	96.1 (5.6)

*Numbers in parenthesis refer to permantly disturbed acres.

**Trace (less than 0.01 acres).

***The expansion of the Norton station is common to all routes and would result in 5.5 acres of Juniper-Grassland vegetation permanently disturbed.

The following discussion of impacts to vegetation will concentrate on reclamation potential of each route and emphasizes those areas with low potential for reclamation. (See Plant Communities/Reclamation Potential Map.) Unsuccesful revegatation would likely result in soil loss, rilling, decreased soil and vegetative productivity and establishment of weed and other undesireable species. All other areas are considered to have a moderate to high potential for successful revegetation, with ground cover reestablished within 1 to 5 years after surface disturbance.

Those areas where reclamation potential is expected to be low occur in the southern portions of the Route 1 along all of segment H and the northern portions of segment B. This would result in increased invasion of weed species and soil loss which may result in loss of productivity. The total acreage of low reclamation potential is approximately 27.3 acres.

Wildlife

Impacts during construction are expected to affect wildife by: 1) direct loss of less mobile species run over by construction equipment; 2) direct loss of various species such as reptiles and birds killed by construction crews; 3) destruction of habitat such as nesting sites and; 4) displacement of wildlife in the immediate area of activity.

In addition, operation and maintenance of a project of this type normally has little effect on wildlife. Wildlife might be effected by: 1) potential for large raptor electrocution (normally no problem for 69 kV lines and larger); 2) increasing human activity along new construction roads causing disturbance to wildlife and; 3) providing new perch sites (pole structures) for birds of prey.

Each of the above identified impacts could be expected to occur; however, they are usually unquantifiable. Habitat destruction is one impact which can be quantified. Overall habitat destruction is directly proportional to surface disturbance and reclamation potential as previously described in the vegetation section. Of greatest concern is the amount of disturbance in identified important habitats. Table 3-2 summarizes the miles traversed and acres disturbed of these important habitats. The primary reasons these particular habitats are of concern is briefly summarized below.

Pinon-Juniper: The rate of revegetation ot the climax community is extremely slow. This community provides inportant habitat such as a wintering areas for deer, raptors jays, and passerine birds.

Riparian: The rate of revegetation to this climax community is slow. This habitat is used by many avian species (including dove and quail) for nesting and brood rearing. Construction activities during the spring of the year (as proposed) would disrupt any nesting activities in and adjacent to the area.

Cliffs and Talus Slopes: Reclamation in these areas is extremely difficult and not expected to occur. These areas also have potential for raptor nesting.

Spring construction activities within about 1 mile of any raptor nests would probably result in nest abandonment. This is expected to be the case with the possible eagle nest near segment E of route 1 should it prove to be an active nest.

TABLE 3-2
SUMMARY OF IMPORTANT HABITAT DISTURBANCE BY ROUTE

Route	Pinon-Juniper		Riparian		Cliff & Talus Slopes	Total	
	Miles	Acre	Miles	Acre	Description for those areas where disturbance is expected	Acres	Cliffs Affected
1*	1.0	1.6	2.0	3.2	escarpment	.7	Yes
2	0.0	0.0	1.5	2.4	----------	0.0	No
3	9.0	19.0	3.0	4.7	escarpment	.7	Yes
4	2.3	3.6	1.9	3.0	escarpment	1.0	Yes
5	1.0	1.6	2.2	3.4	escarpment	.7	Yes
6	1.0	1.6	1.7	3.5	----------	0.0	No

*Proposed Action

Cultural Resources

It is expected that any sites found during the 100% Class III survey would be avoided; however, if a site cannot be avoided adverse affects would be mitigated by collection in accordance with the provisions of Section 106 of the National Historic Preservation Act (16 U.S.C., 470f). The probability of not being able to avoid sites is low, therefore, the level of effects to cultural resources would be negligible.

Visual Resources

Visual impacts are determined by levels of visual contrast as defined by the BLM 8431 Manual. This approach takes into account the importance of the area's visual resource and the degree of visual change anticipated. The process for determining the level of visual contrast addresses two issues: the type and extent of actual physical contrast and the level of visibility. Table 3-3 shows classes of visual impacts and visual contrast for each route alternative.

Approximately 5 miles of high visual impacts and strong visual contrast on this route occur along segments G and E. These impacts are associated with both road construction and the presence of towers in an area of high visibility from Highway 85 and the proposed Los Atrevidos subdivision. In addition, the line would be skylined for approximately 1 mile of segment E. High visual impacts to the La Bajada escarpment also occur on segment E. Visual impacts on the remainder of the route would be low.

TABLE 3-3
MILES OF CLASSES OF VISUAL IMPACT AND VISUAL CONTRAST

Route	Total	Visual Impact			Visual Contrast		
		High	Moderate	Low	Strong	Moderate	Weak
1	40.4	5.3		35.1	5.3		35.1
2	43.4	11.8	4.0	27.6	11.8	4.0	27.6
3	38.1	9.7		28.4	9.7		28.4
4	37.6	8		29.6	8		29.6
5	37.0	8		29.0	8		29.0
6	40.5	3	1.0	36.5	3	1.0	36.5

Land Use

Adverse affects to the proposed Los Atrevidos development could be expected. Los Atrevidos would be crossed by .7 miles along segment E of the route and bounded by an additional 1 mile of line along segment G. The crossing of the proposed subdividion would adversely affect it by degrading visual quality. This impact would be moderate.

Recreation

Construction and operation of the Proposed Action could displace recreationists pursuing dispersed activities by noise, dust, or restricted access. However, given the vast acreage available for these pursuits in the area, the effect would be negligible. Impacts to recreation throughout this route would be low.

Social and Economic Conditions

The 36 man force required to build the powerline would be expected to be recruited largely from the Albuquerque-Santa Fe area, with a few workers moving into the area from outside. The workers from outside should be able to easily find temporary housing in the Albuquerque area. Since the work force would not be from a considerably different social group than the local population, the project is not expected to lead to conflicts in social mores or attitudes. The level of impacts to the human environment from construction or operation of the powerline as determined are low and, therefore, would not result in degradation of the quality of life. The positive impact of the Proposed Action would be to provide additional transmission capality for northern New Mexico. This would safeguard against power outage which would have a detrimental effect on economic growth and the quality of life.

ROUTE 2 - SEGMENTS B,F,Q,P,H

Soils

Approximately 20 miles of this route would cross areas of soils with high erosion potential.

Vegetation

Part of segment Q is located in highly dissected topography and steep slopes. Reclamation would be difficult, and impacts are similar to these expected along segments H and B of Route 1. The total acres of low reclamation potential is 31.7.

Wildlife

Route 2 would cross less than 2 miles of disturbance to important wildlife habitats.

Land Use

Construction of the proposed transmission line through the urbanizing outskirts of Santa Fe along segment F has the potential for high adverse impacts, such as visual intrusion, decrease in land values, and noise distruption during construction. There are approximately 200 existing residences within close proximity of segment F.

Recreation

Construction and operation along Route 2 could effect recreation at the Santa Fe Country Club. Construction noise and dust would lower the quality of the recreational experience during the construction phase. Operation of the facility, because of visual degradation, could have a long-term affect on recreational quality. Impacts to the Santa Fe Country Club would be expected to be moderate. The remainder of the route would be typified as having a low impact to recreation.

Social and Economic Conditions

Segment F would have a low impact on property values along the route.

ROUTE 3 - SEGMENTS J,L,M,R

Soils

Approximately 18 miles of Route 3 would cross areas of soils with high erosion potential. However, this route would avoid the highly dissected area and erodable soils along segment G.

Vegetation

Portions of segments M and R cross areas where reclamation potential is expected to be low. The impacts are similar to those discussed for Route 1. In addition, segment J crosses approximately 9 miles of pinon-juniper community. Construction of new access along this segment would result in a loss of 19 acres of the pinon-juniper community. Because of the long revegetation rate associated with pinon-juniper this would result in long-term impacts (50-100 years) to this community. The total area of low reclamation potential is 25.0 acres.

Wildlife

Route 5 would result in the greatest amount of disturbance in the pinon-juniper community. It would also result in more disturbance to important wildlife habitat (Table 3-2). During construction, the immediate area would not be of use to the small wild horse herd in the Montoso Peak vicinity. The possible eagle nest in the Santa Fe River Canyon would not be affected by this route.

Visual Resources

High visual impacts and strong visual contrasts would occur on approximately 10 miles of this route (segments L and M). These impacts relate to the visibility of the line from major travel routes.

Land Use

Impacts to land use along segments M and R of this route are considered moderate. New development on Santo Domingo and San Felipe lands are often considered adverse by Pueblo residents because of the reduction of their land base. Additionally, route segment R could conflict with residential lands near Algodones.

ROUTE 4 - SEGMENTS B,C,D,T,M,R

Minerals

Segment D has possible future conflicts with uranium prospecting permits on La Bajada Mesa. (See comments on Route 1 segment E above.)

Soils

Approximately 24 miles of this route cross soils of high erosion potential. This route would avoid the highly dissected area and erodable soils on segment G and H.

Vegetation

Segment T, near the Santa Fe River, is an area with low reclamation potential. Impacts along segment R and M are similar to Route 3. The total area of reclamation potential is about 25.7 acres.

Wildlife

This route would result in disturbance of fewer miles of important wildlife habitat (Table 3-2). Route 4 is about 3 miles from the possible eagle nest and would not affect this nest, if active.

Social and Economic Conditions

Segment D would have minimal conflicts with the community of La Bajada. Segment M would have low level conflicts with Indian attitudes as discussed under Route 3.

Visual Resources

Approximately 8 miles would be crossed (segments D and M) where high visual contrasts are anticipated, relating primarily to the crossing of Santa Fe Canyon and proximity to travel routes.

Land Use

Potential impacts to Route 4 would be the same as those defined on Route 3 except that additional potential for impacts occur along the lower portion of segment D because of it proximity to La Bajada village. The visual degradation caused by the Proposed Action could affect the rural, small scale of the village.

ROUTE 5 - SEGMENTS B,C,U,E,N,R

Soils

Approximately 22 miles of this route would cross areas of soils of high erosion potential.

Vegetation

The southern portion of segment N and those areas through Galisteo Creek are expected to be areas of low reclamation potential. The impacts along segment R are described for Route 3. The total area of low reclamation potential would be 22.6 acres.

Wildlife

Route 5 would have impacts similar to Route 1; however, it would result in less disturbance of important habitat (Table 3-2).

Visual Resources

High visual impacts and strong visual contrast along Route 5 result from the disturbance of the La Bajada escarpment (segment E) and the visibility of the line from Highway 85 (segment N).

Land Use

Route 5 would cross the proposed Los Atrevidos subdivision (segment E). Below Los Atrevidos the line would cross the Santo Domingo and San Felipe Pueblos to the east of segment M. Impacts are the same as for segment N.

ROUTE 6 - SEGMENT B,C,U,K,Q,P,H

Minerals

Segment K would have a potential for future conflicts with uranium prospecting permits on La Bajada Mesa.

Soils

Approximately 22 miles of Route 6 would cross areas of soils of high erosion potential.

Vegetation

The impacts to areas of low reclamation potential occur along segments B,Q, and H. The total area of low reclamation potential would be 32.8 acres.

Wildlife

Segment K comes within 1 mile of the possible eagle nest as does segment E of Route 1 with the same impacts expected. Route 6 ascent to La Bajada Mesa is not expected to require tower placement in the cliff and talus slope habitat. Table 3-2 summarizes the miles traversed and acres disturbed of the important habitats associated with this route.

Visual Resources

High visual impacts and strong visual contrast would occur on approximately 3 miles of segment K which cross Santa Fe Canyon and Highway 85.

Land Use

This route would cross no lands currently identified for future development and only 1.3 miles of Indian lands. The overall impact would be low.

NO ACTION ALTERNATIVE

Impacts of the No Action Alternative include the possiblility of power outages and unreliability which could lead to economic slow down and negative impacts to the local quality of life in northern New Mexico.

UNAVOIDABLE ADVERSE EFFECTS

The following section discusses those effects that are unavoidable after all mitigating measures are applied.

Visual

The lines' visual intrusion would be noticed by residents and motorists, particularly when the line parallels or crosses major travel routes. Graded areas for roads and structure assembly would also be visible until vegetation re-establishes.

Land Use

Construction activities and access roads would cause short-term disruption of some land use activities, primarily grazing. Some areas may be exposed to trash dumping by unauthorized users of the access road. Use of land directly under

the lines would be limited to compatible uses such as grazing or agriculture. Land uses which could occur but are incompatible with transmission lines would be inhibited or prohibited during the life of the project.

Vegetation

For the life of the project, there would be permanent removal of vegetation where pole structures are located and as a result of the expansion of the Norton station. This would result in approximately 6 acres of surface within all plant communities. Where reclamation efforts are unsuccessful, natural succession would occur at other disturbed areas but its extent would depend on the degree of surface (soil) disturbance and the nature of use of the ROW after construction. Another effect would be the displacement of wildlife.

RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

The long-term affects of the Proposed Action on the environment are minimal. The vegetative communities crossed, with the exception of pinon-juniper, have a relative short-term recovery rate of 3 to 5 years. The pinon-juniper community could require up to 100 years to reach predisturbance condition. No other loss of long-term productivity of the environment has been identified.

IRREVERSIBLE AND IRRETRIEVABLE EFFECTS

Cultural and paleontological resource values could be permanently lost if the project were implemented. Sites near the line could become more susceptible to looting and vandalism by unauthorized users because of improved access. If any site had to be excavated, there would be a loss of potential scientific information because archeological and paleontological techniques as yet are not sufficient to allow for complete recovery of data. If soils are allowed to erode there would be a loss of the soil resource and subsequent decline in productivity.

BLM RECOMMENDED MITIGATION

In addition to measures proposed by the applicant to mitigate potential adverse impacts, a number of measures have been identified by BLM. These measures, if implemented, would serve to further reduce potential impacts identified in chapter 3. It is recommended by BLM that the following measures be required, by stipulation, on public lands:

1. If Route 3 were selected construction on segment J should be restricted to summer months to avoid affecting species which use the area as wildlife wintering grounds.

2. A certified biologist should conduct a field observation for any selected route prior to construction for raptor nests within 1 mile of the ROW.

3. On-the-ground paleontological surveys of rock outcroppings along any selected route, along with a policy of siting structures, access roads, and the ROW to avoid paleontology sites with important scientific values as determined by the BLM manager, should be undertaken.

4. In all areas where feasible, clearing for new access roads should be limited initially to crushing rather than uprooting vegetation. Maintenance may require blading at a later time, but this should only occur when and where absolutely necessary.

5. All new access roads should be closed upon completion of the project.

6. Juniper and pinon should not be removed unless it is physically impossible to avoid destruction. If large plants must be cleared, one living branch should be left intact.

7. Riparian vegetation should not be removed unless no alternative exists.

8. Vegetation that has been saved during construction should be nurtured and allowed to grow by pruning away broken limbs and scattering removed soil and vegetation that may restrict growth.

9. Standard fire prevention measures should be taken at all times with special care in areas of heavy vegetative density.

10. Water bars, or other appropriate measures such as splitting, hydro-mulching on terracing should be constructed in access roads for all slopes over 5 percent.

11. Special precautions should be taken to prevent destruction of raptor nests. A reconnaisance of La Bajada Mesa and Santa Fe Canyon to identify raptor nests (including the possible eagle nest) should be conducted. Should active nests be located within 1 miles of the construction area, then disturbance in that area should be restricted until after fledging.

12. Public safety warning signs should be placed where appropriate during construction.

13. New roads should be established to conform with natural contours where practical to reduce visual impact.

14. Placement of towers should be done so as to reduce or minimize skylining where possible.

15. Non-specular conductors should be used in areas of high visibility, expecially highway crossings.

16. If segment K were selected, a local rerouting should be done.

17. Tower color should be compatible with existing transmission facilities and should include natural weathering or design color to reduce glare.

18. The applicant should develop a Construction/Restoration Operation Plan subject to BLM approval. The plan should contain general and site-specific stipulations for construction and rehabilitation that would implement the mitigation measures of the EA.

19. The final centerline should be determined cooperatively by the applicant and the BLM. Selection considerations should include engineering requirements, costs, access, visual impacts, and surface disturbance.

20. The final structure sites should be determined cooperatively by the applicant and BLM. Factors considered are the same as item 19.

21. Access requirements should be determined cooperatively by the applicant and BLM. Preferred routes would be those that can be travelled without blading or excavation. Blading, excavation, or vegetation removal would not be authorized if the equipment can safely negotiate the route without damage.

22. All blading and excavation must have prior approval by BLM. BLM inspectors would be present for all blading and excavation.

23. Trees and brush should be trimmed or cut in preference to dozing them out. Dozing of trees and brush would be permitted only when excavation is necessary and approved.

24. The applicant and BLM should cooperatively determine the extent of structure site preparation.

25. Vegetation may be cut to prepare a structure framing pad; but blading or excavation should not be permitted. If a structure cannot be framed on the natural ground then aerial framing would be necessary.

26. Tree and brush cutting would be permitted only for site access, conductor clearance, equipment pads, and structure pads. Tree and brush cutting would be permitted for stringing the sock line.

27. In some rough or steep areas vehicular travel may not be permitted along the ROW. This should be a BLM determination.

28. Erosion should be controlled on the disturbed area through application of practices to include, but not necessarily limited to: water control structures, mulching, and revegetation. The specific practices and where they are to be applied should be determined by BLM.

29. All excavated areas should be returned as closely as practicable to the original grade and contour.

30. All blading berms should be spread evenly across the disturbed area.

31. Stringing frames over county, private, and Forest Service roads should be provided to assure uninterrupted access.

32. All cut or dozed trees should be disposed of as per BLM instructions.

33. Applicant should not start construction until BLM issues a notice to proceed.

34. BLM should provide compliance supervision as necessary to ensure applicant compliance with the grant stipulations.

Monitoring

On-the-ground monitoring will take place following the completion of the environmental assessment, assuming the ROW is granted and the project is implemented. The purpose of this monitoring will be to determine whether (1) impact predictions are accurate, (2) any unanticipated and/or unpredictable effects are occuring, (3) mitigation measures are working, and (4) differences of opinion regarding impacts need to be resolved.

The following is a listing of monitoring needs identified for this project through scoping and impact analysis. Each of the items identified below also include a discussion on where in the analysis process the need for monitoring was first identified, why it should be monitored, a determination of its observability and/or measurability, and for those needs which are measurable, a brief analysis of time, cost, and workmonth requirements, and how the information gathered will be used in the future.

Monitoring needs identified in this section will be used by the Resources Areas involved, along with any additional needs identified by them, to prepare a site specific Environmental Monitoring Plan which will become a part of the Record of Decision as per Albuquerque District Office Instruction Memorandum No. NM-010-80-70, District Monitoring Program Guidelines.

1. The use of specular versus nonspecular conductor needs to be monitored. Scoping analysis identified visual resources as one of the critical resources to be affected. Areas of high visibility such as segment K where the line crosses Interstate 25 in alternative 6 need to be monitored in order to determine line visibility, weathering, and visual impacts if specular conductor is used. If nonspecular is used, comparative monitoring is needed to determine advantages, if any, over the use of specular line. This monitoring is readily observable and should be conducted by the BLM through comparative photo points over a five year period of time. One (1) workmonth would be required to complete this monitoring. Information gathered from this effort needs to be provided to Resource Areas, District Offices, industry, and individuals involved in this and other projects for use in future analysis and assessments. The District Office monitoring specialist should coordinate this effort.

2. Construction and reclamation activites along the areas of low reclamation potential should be monitored. Areas along segments B,Q, and H on Route 6 have been identified as areas that may require special treatment in order to establish an effective ground cover to prevent excessive soil erosion. The special reclamation treatments that may be considered include hydromulching of areas with slopes in excess of 5 %, jute matting, discing in straws or special seed mixes. The method for monitoring success of special treatment verses standard treatment is both observable and measureable. By establishing photo points, taken quarterly, of the specially treated areas and standard treatment areas

observed differences may be measured. The areas may also be compared by establishing quadrants and comparing cover and species composition. It is estimated that 1-2 workmonths would be needed to accomplish this effort over a 5 year period.

This data will provide the District with documented information as to whether special reclamation practices are practical, cost-effective and worth requiring on future projects similar to this Proposed Action. In addition, this will provide a method for determining if impact predictions are accurate for determining the effects of powerline proposals or area where reclamation is expected to be difficult.

CHAPTER 4
CONSULTATION AND COORDINATION

The Scoping Process

Regulations for implementing the National Environmental Policy Act (40 CFR, Part 1501.7) require an early and open scoping process. During this process, the scope of issues to be analyzed and issues related to the proposed action were identified. The major purpose of the scoping process is to provide for better decisions. Information obtained during the scoping process was one of the sources used to determine impacts and to identify alternatives to be addressed in the EA.

Additional purposes of the scoping process were to inform affected Federal, State and local agencies and other interested persons about the proposal, and to identify existing environmental reports and information related to the proposal. Related consultation and review requirements were also identified and addressed in the EA (Chapter One, Authorizing Actions).

The scoping process involved discussions with the public and resource specialists and managers of BLM and other relevant agencies. Comments were also solicited during public scoping meetings.

Two public scoping meetings were held in Santa Fe, New Mexico on July 22, 1981, to discuss the proposal and the environmental assessment. A total of 18 people, in addition to BLM, PNM, and FS staff, attended the meetings. Approximately 600 announcements of these meetings were mailed prior to the meetings. A press release was also sent to a range of New Mexico media. Full reports on the meetings are on file with the BLM New Mexico State Office, Division of Planning and Environmental Coordination.

The only major issue raised during the public meetings related to the potential impact to the proposed Los Atrevidos Subdivision at the base of La Bajada Mesa. Joseph G. Lawler, Attorney, Stephen R. Flance, Planning Consultant, and Charles Thompson presented written documentation expressing their views on behalf of the potential development. This documentation included material from the county of Santa Fe expressing concern about the development. Much of this material related to the potential adverse visual impacts of the proposal on the proposed development and on the La Bajada escarpment.

In addition to the public meetings, a number of meetings were held with the the Bureau of Indian Affairs, Forest Service, County of Santa Fe, Corps of Engineers, Fish and Wildlife Service, and the City of Santa Fe to solicit their views and concerns. Numerous meetings with BLM District and Area staff were also held.

In addition, a special field trip with a representative of the county of Santa Fe was taken. A meeting to determine user's attitudes toward visual resources was also held with representatives of BLM, FS, PNM, the City of Santa Fe and the County of Santa Fe. The details of this meeting are on file at the BLM New Mexico State Office.

List of Preparers and Contributors

This EA was prepared by the Non-Bureau Energy Initiatives team of the New Mexico State Office. This team is made up of the following personnel.

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Future Activities

The draft Environmental Assessment will be available for a 30 day public review period. The availability of this document for review will be announced by a general news release.

Additionally, approximately 30 copies were sent to scoping meeting participants and other interested parties and agencies.

Following review of this document a final EA and land report will be prepared. This document will incorporate comments on the draft environmental assessment. It is expected that the Albuquerque District Manager will reach a decision on the issuance of any ROW by February 1982.

APPENDIX A - DESCRIPTION OF THE PROPOSED ACTION - SUPPLEMENTAL INFORMATION

Table A-1 Northern New Mexico Area Peak Winter Capacity Requirements

Table A-2 Construction Equipment Types

Table A-3 Construction Schedule

Table A-4 Labor Force Requirements by Work Phase

Table A-5 Contract Work Force Requirements

Figures -

Tower Structures
BA Station Layout
Norton Station Layout
Land Ownership

TABLE A-1
NORTHERN NEW MEXICO AREA PEAK (GREATEST)
WINTER CAPACITY REQUIREMENTS
VS. FIRM CAPACITY

DEMAND (MW)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PGT	101	110	119	127	139	149	158	167	175	184
Santa Fe/Las Vegas	92	96	100	106	113	121	127	135	140	147
Los Alamos	72	73	75	76	78	79	81	82	84	88
Total Demand	265	279	294	309	330	349	366	384	399	419
Stimated Transmission Losses	7	7	8	8	8	8	8	8	9	8
Capacity Required	272	286	302	317	338	357	374	392	408	428
Import Capacity	245	245	245	245	245	245	245	245	245	245
Local Generation	13	13	13	13	0	0	0	0	0	0
Firm Capacity	258	258	258	258	245	245	245	245	245	245
Excess (+) or Deficiency (-) of Firm Capacity without BA-Norton	-14	-28	-44	-59	-93	-112	-129	-147	-163	-183

TABLE A-2
PROPOSED BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

CONSTRUCTION EQUIPMENT TYPES

Vehicle	Number	Area of Operation	Where Vehicle Travels
a) utility vehicle	6	down the centerline	down the centerline
b) pick-up trucks	6	soil test sites, structure sites, pulling/tensioning sites, and throughout the ROW for cleanup	along the ROW
c) Bulldozer	2	any location that clearing or grading is required including roads, structure sites, oense vegetation and timbered areas	along the ROW
bulldozer with clearing blade up		down the centerline to pull in the sock line	down the centerline
d) flat-bed trucks	2	at all structure sites and along the ROW when hauling material along the ROW when removing cleared waste	along the ROW
e) truck with boring equipment	1	predetermined sites along the centerline	along the ROW
f) digger-cat or truck-mounted auger	2	structure sites	along the ROW
g) boom truck	2	structute sites and staging areas	along the ROW
h) ready-mix truck	2	at and between temporary batch plants and structure sites	along the ROW
i) wagon drill (mounted on crawler tractor)	1	structure sites	along the ROW
j) truck with rock coring equipment	1	structure sites where rock anchors are required	along the ROW

Vehicle	Number	Area of Operation	Where Vehicle Travles
k) air compressor and jack hammer (truck-mounted)	2	structure sites where rock anchors are required	along the ROW
i) air compressor and tamps (truck-mounted)	1	structure sites where grillage anchors are required	along the ROW
m) air compressor and driver (truck-mounted)	1	structure sites	along the ROW
n) crawler tractor with ripper blade or cable plow	1	structure sites	along the ROW
o) mobile crane (15-20 ton)	1	structure sites	along the ROW
p) mobile crane (50 ton)	1	structure sites	along the ROW
q) pulling machine	2	at pulling sites, which are located on the centerline	along the ROW
r) tensioning	1	at tensioning sites, which are located on the centerline	along the ROW
s) reel trailer	3	at and between pulling/ tensioning sites and staging/material storage areas	along the ROW

PROPOSED BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

CONSTRUCTION SCHEDULE

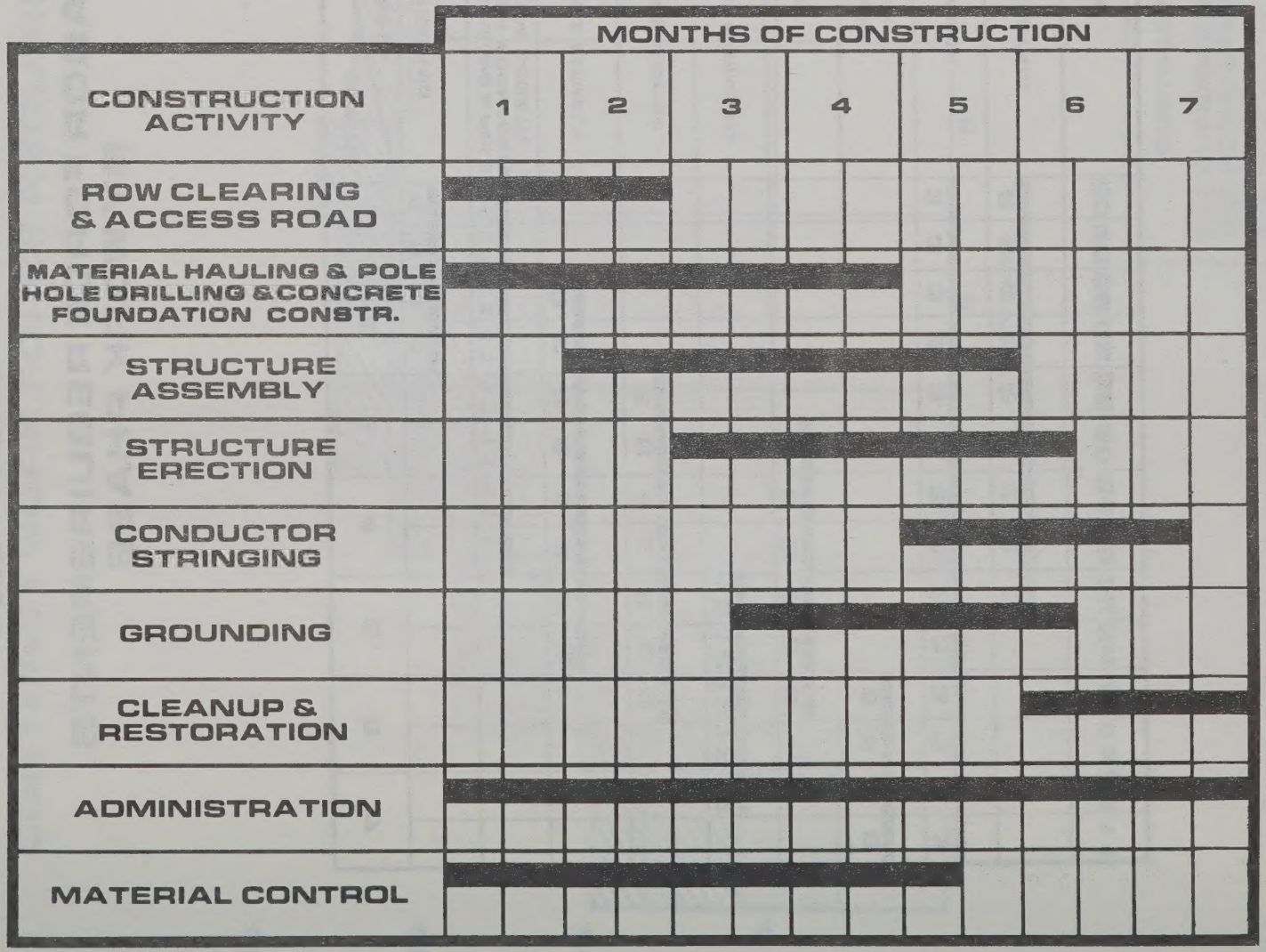


Table A-4

PROPOSED BA STATION TO NORTON STATION 345 KV TRANSMISSION PROJECT

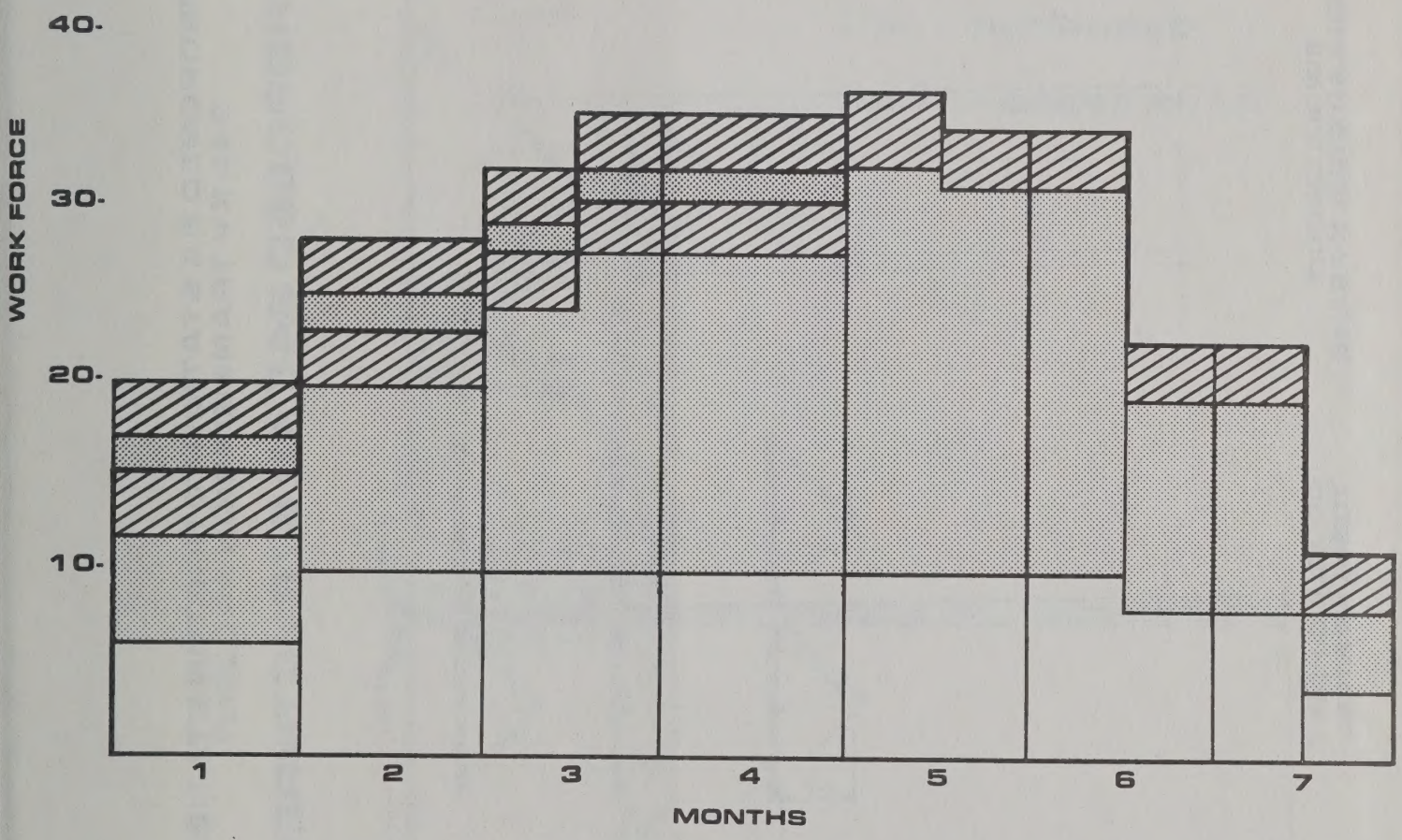
LABOR FORCE REQUIREMENTS BY WORK PHASE

	MONTH / WORK PHASE	1		2		3		4		5		6		7	
TRANSMISSION LINE CONSTRUCTION	ROW CLEARING AND ACCESS ROAD	4	4	4	4										
	MATERIAL HAULING & POLE HOLE DRILLING & CONCRETE FOUNDATION CONSTR.	11	11	11	11	11	11	11	11						
	STRUCTURE ASSEMBLY			8	8	8	8	8	8	8	8				
	STRUCTURE ERECTION					8	8	8	8	8	8	8			
	CONDUCTOR STRINGING									12	12	12	12	12	
	GROUNDING						3	3	3	3	3	3			
	CLEAN UP AND RESTORATION											8	8	8	8
	ADMINISTRATION	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	MATERIAL CONTROL	2	2	2	2	2	2	2	2	2					
TOTAL LABOR REQUIREMENTS		20	20	28	28	32	35	35	35	36	34	34	23	23	11

Table A-5

PROPOSED BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

CONTRACT WORK FORCE REQUIREMENTS

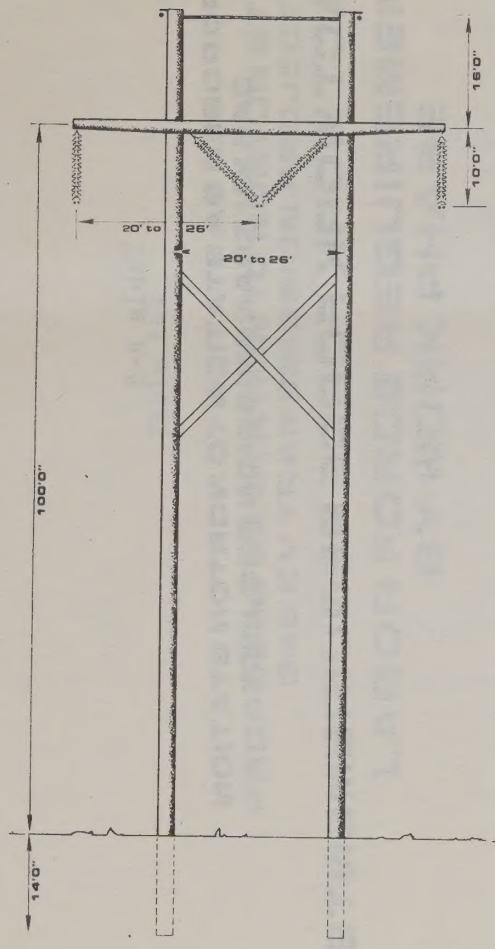


CONTRACT WORK FORCE

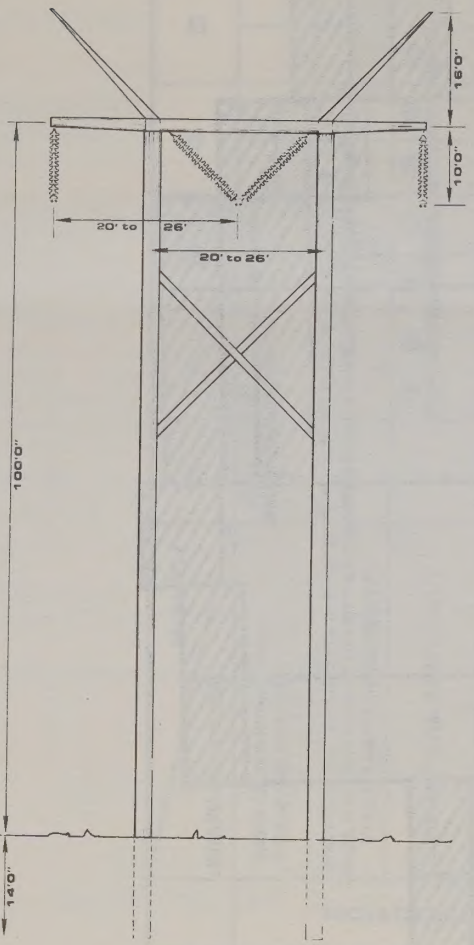
- SUPERVISORS/ ADMINISTRATORS
- LINEMEN/OPERATORS
- LABORERS

PROPOSED BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

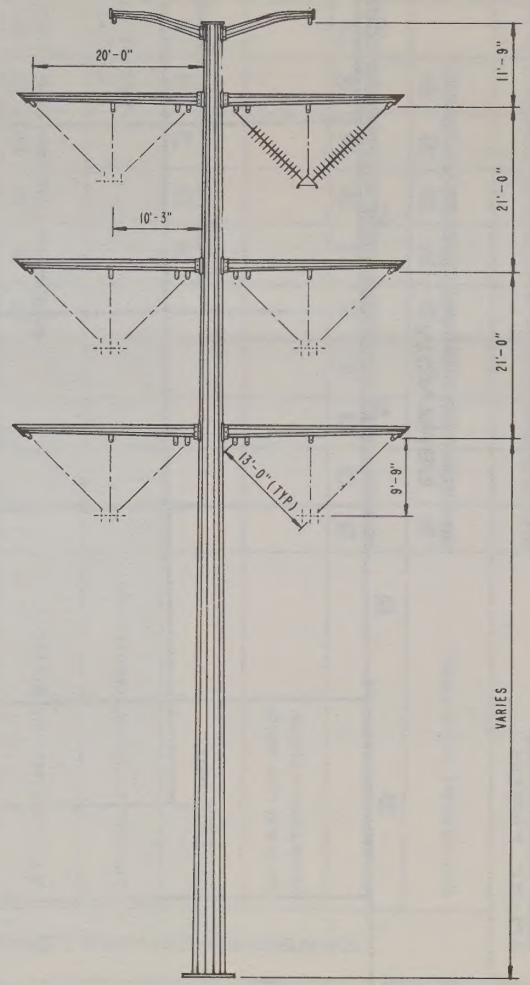
PROPOSED 345 KV STRUCTURES



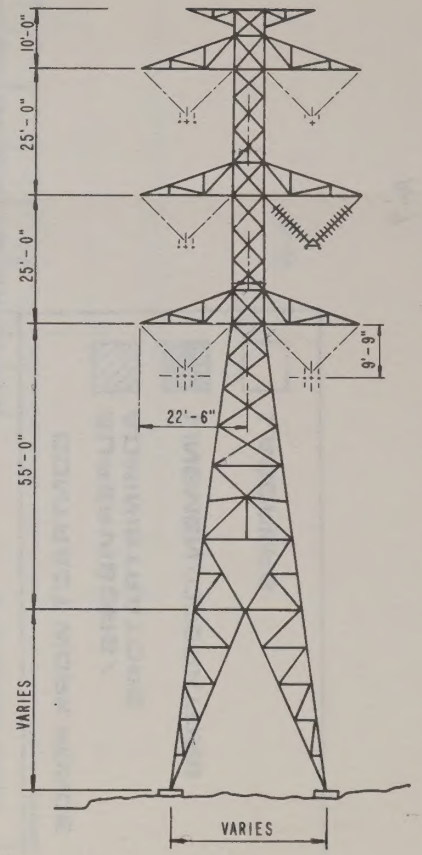
SINGLE CIRCUIT
CONCRETE H-FRAME



SINGLE CIRCUIT
TUBULAR STEEL K-FRAME

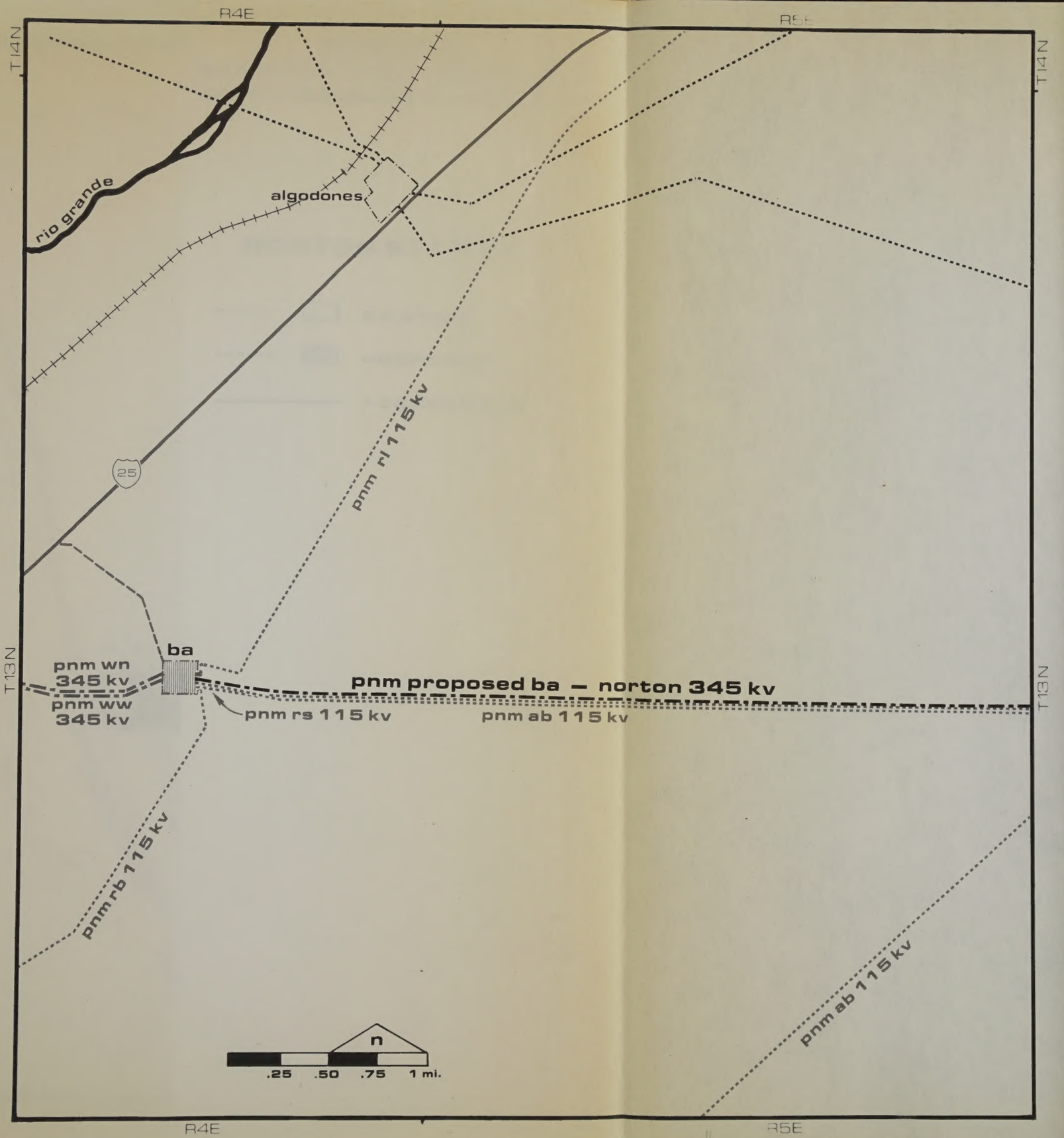


DOUBLE CIRCUIT
TUBULAR STEEL



DOUBLE CIRCUIT
LATTICE STEEL

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

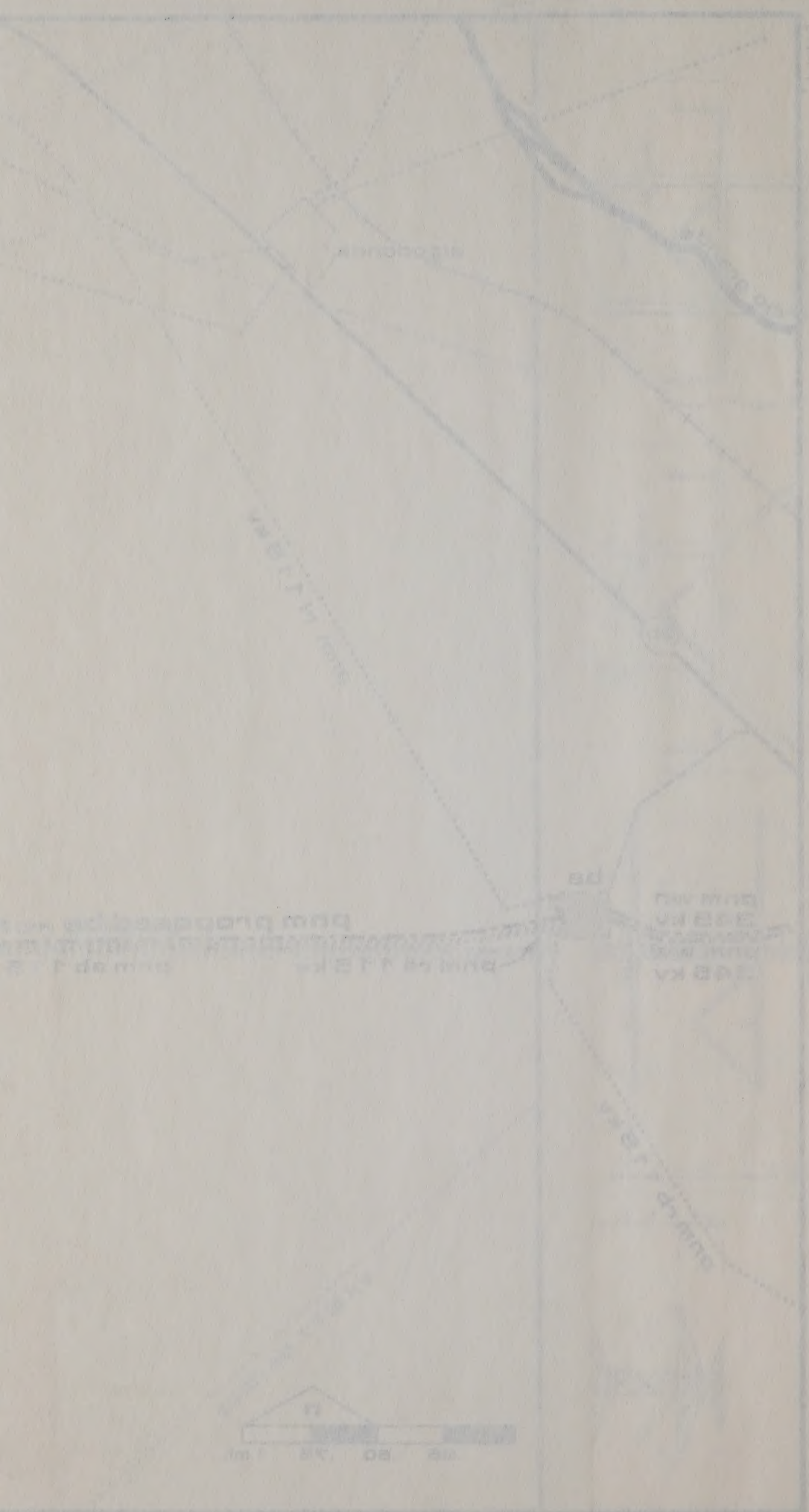


BA STATION

EXISTING

PROPOSED

ACCESS ROAD



R8E

T18N

calabasa arroyo

doe nl 115 kv

canada ancha

plains nh 115 kv

norton station

pnm proposed ba-n 345 kv

buckman road

plains an 115 kv

doe nz 115 kv

pankey mesa

T18N

R8E

0 500 1000 ft.

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

NORTON STATION

EXISTING

PROPOSED

ACCESS ROAD

R4E R5E R6E R7E R8E R9E R10E

T18N T17N T16N T15N T14N T13N

norton
ortiz mountain
montoso peak
colorado peak
cochiti lake
tetilla peak
la majada mesa
bajada
la bajada mesa
alamo creek
santa fe
santa fe railway
cienega creek
galisteo creek
rio grande
sandoval county
santa fe county
ba

A B C D E F G H I J K L M N O P Q R

84 285 85 25 22 14

0 1 2 3 4 5 6

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

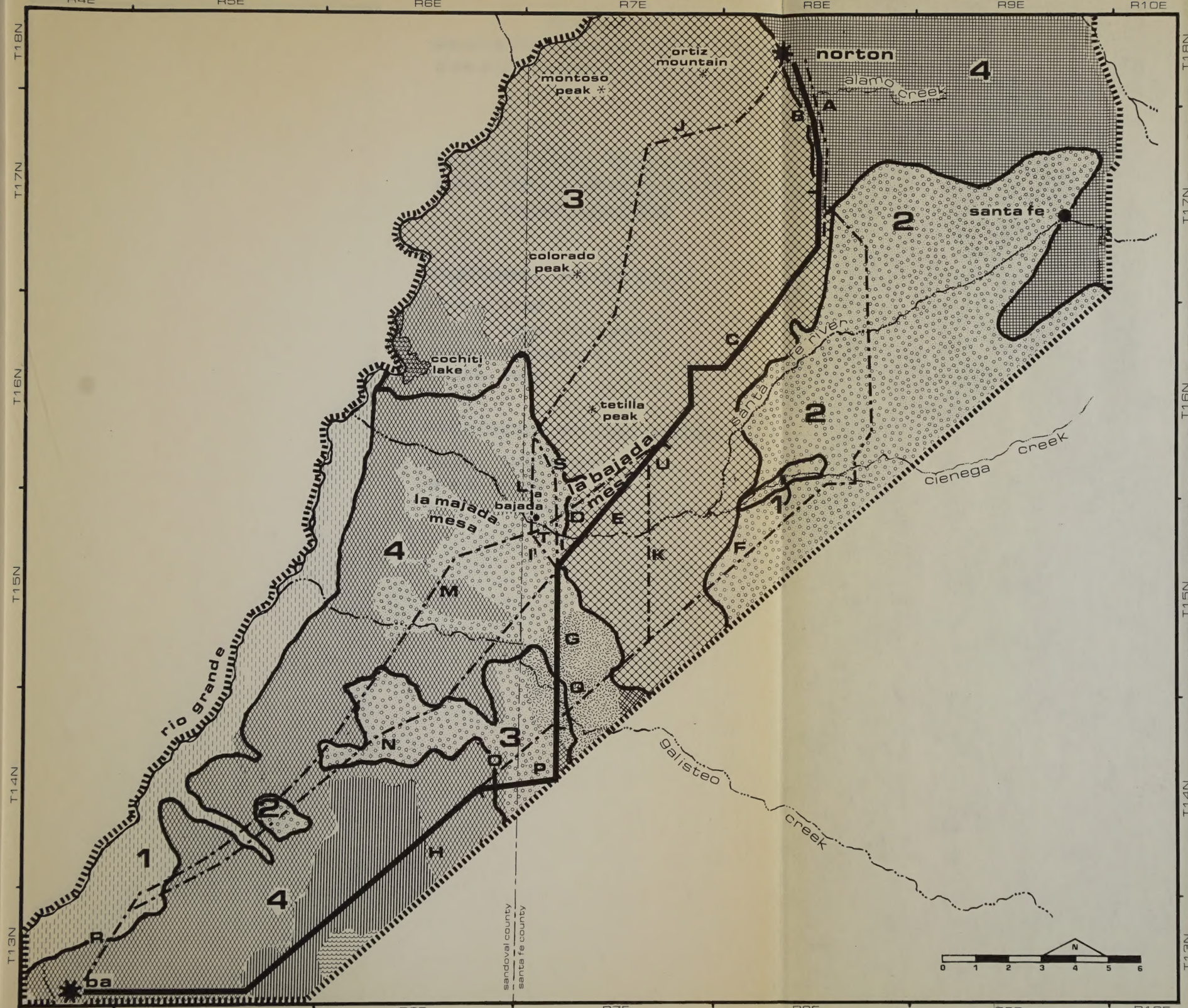
LAND OWNERSHIP

- BLM
- FOREST SERVICE
- INDIAN
- STATE
- PRIVATE
- SANTA FE GRANT
- CORPS OF ENGINEERS

APPENDIX B - RESOURCE MAPS

Soil Associations/Potential Erosion
Paleontological Resources/Cultural Resources
Plant Communities/Reclamation Potential

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT



SOIL ASSOCIATIONS

- GILA - VINTON - GLENDALE
- PANKY - POJOAQUE - HARVEY
- POJOAQUE - ROUGH BROKEN LAND
- LAS LUCAS - POJOAQUE
- ROUGH BROKEN LAND - EMBUDO
- LAS LUCAS - LITLE - PERSAYO
- MAJADA - CALABASAS - APACHE
- TRAVESSILLA - ROCKLAND - BERNAL
- TRAVESSILLA - PERSAYO - ROCKLAND

POTENTIAL EROSION BOUNDARIES

		SEDIMENT YIELD AC FT/MI²/YR
1	VERY LOW	<0.2
2	LOW	0.2-0.5
3	MEDIUM	0.5-1.0
4	HIGH	1.0-3.0
5	VERY HIGH	>3.0

SOURCE: USDA SOIL CONSERVATION SERVICE 1977

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

POTENTIAL CULTURAL AND PALEONTOLOGICAL RESOURCES

CULTURAL (POTENTIAL)

- LOW
- LOW-MODERATE
- MODERATE
- HIGH

PALEONTOLOGICAL (POTENTIAL)

- UNKNOWN
- LOW
- MODERATE

R4E R5E R6E R7E R8E R9E R10E

T18N T17N T16N T15N T14N T13N

norton
ortiz mountain
montoso peak
alamo creek
santa fe
colorado peak
cochiti lake
tetilla peak
santa fe river
la bajada mesa
la majada mesa
la bajada
cienega creek
rio grande
galisteo creek
sandoval county
santa fe county
ba

A B C D E F G H I I' J K L M N O P Q R S T U

0 1 2 3 4 5 6

R4E R5E R6E R7E R8E R9E R10E

T18N T17N T16N T15N T14N T13N

ortiz mountain

montoso peak

norton

alamo creek

santa fe

colorado peak

cochiti lake

tetilla peak

santa fe river

la bajada mesa

la bajada

la majada mesa

cienega creek

rio grande

galisteo creek

sandoval county
santa fe county

A B C D E F G H I J K L M N O P Q R S T U

0 1 2 3 4 5 6

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

PLANT COMMUNITIES

- PINON - JUNIPER
- JUNIPER - GRASSLAND
- GRASSLAND
- RIPARIAN
- MINOR RIPARIAN
- TALUS SLOPES
- FARMLAND
- RESIDENTIAL - FARMLAND
- SPECIAL LAND USE
- EXPECTED LOW RECLAMATION POTENTIAL

APPENDIX C - AFFECTED ENVIRONMENT - SUPPLEMENTAL INFORMATION

Table C-1 Miles of Vegetation Types Traversed by Route Segment

Table C-2 Acres Temporarily and Permanently Disturbed by Segment and Plant Community

Figure - Map of Visual Contrast and Visual Impact

TABLE C-1
MILES OF VEGETATION TYPES TRAVERSED BY SEGMENT

Segment (Miles)	Vegetative Type: Pinon-Juniper	Juniper-Grassland	Grassland	Riparian and Minor Riparian	Cliffs and Talus Slope	Total
A		5.5				5.5
B		4.8				4.8
C	1	4.5	1.5	.2	T[a/b]	7.2
D	1.3		3.6	.1	T[b]	5.0
E			3.8	.5	T[c]	4.3
F		13.3	3	.5		16.8
G		4.0		.3		4.3
H		11.5	1	1	T[b]	13.5
I	1.3			.3	T[b]	1.6
J	9.0	4.9		1	T[c]	14.9
K		2.5	2.2	.5		5.2
L			2.7	.5		3.2
M		11.6	4	1.5		17.1
N		13.1	1.7	1.5		16.3
O		3				3
P		4.8				4.8
Q		3.5				3.5
R		2.9				2.9
S	1.1		2.0			3.1
T			.5	.1		.6
U			1.5			1.5

[a/] T=Trace

[b/] Assumes two tower sites with 100 foot spur roads

[c/] Assumes that vegetative community will be spanned

TABLE C-2
ACRES TEMPORARILY AND PERMANANTLY DISTURBED BY
SEGMENT AND PLANT COMMUNITY

Segment (Miles)	Vegetative Type: Pinon-Juniper	Juniper-Grassland	Grassland	Riparian and Minor Riparian	Cliffs and Talus Slope	Total
A		8.8(.02)[a]				8.8(.02)
B		7.7(.01)				7.7(.01)
C	1.6(T)[b]	7.2(.01)	2.4(.01)	.3(T)		11.5(.02)
D	2.0(T)		5.8(.01)	.2(T)	.7(T)	8.7(.01)
E			5.8(.01)	.8(T)	.7(T)	7.3(.01)
F		20.7(.04)	6.3(.01)	.8(T)		27.8(.05)
G		12.8(.01)		.5(T)		13.3(.01)
H		27.9(.03)	1.6(T)	1.6(T)		41.1(.03)
I	4.2(T)			1.0(T)	.7(T)	5.9(T)
J	19.0(.03)	11.3(.01)		1.6(T)	.7(T)	32.6(.04)
K		8.0(T)	7.0(T)	1.6(T)		16.6(T)
L		4.3(T)	4.3(T)	.8(T)		9.4(T)
M		33.7(.03)	10.6(.02)	2.3(T)		46.6(.05)
N		40.4(.04)	2.8(T)	2.3(T)		45.5(.04)
O		4.7(T)				4.7(T)
P		11.4(.01)				11.4(.01)
Q		5.5(.01)				5.5(.01)
R		4.5(T)				4.5(T)
S	3.5(T)		6.2(T)			9.7(T)
T			1.6(T)	.2(T)	.3(T)	2.1(T)
U			2.3(T)			2.3(T)

[a] Values are shown as acres temporarily and (permenantly) disturbed

[b] T=Trace

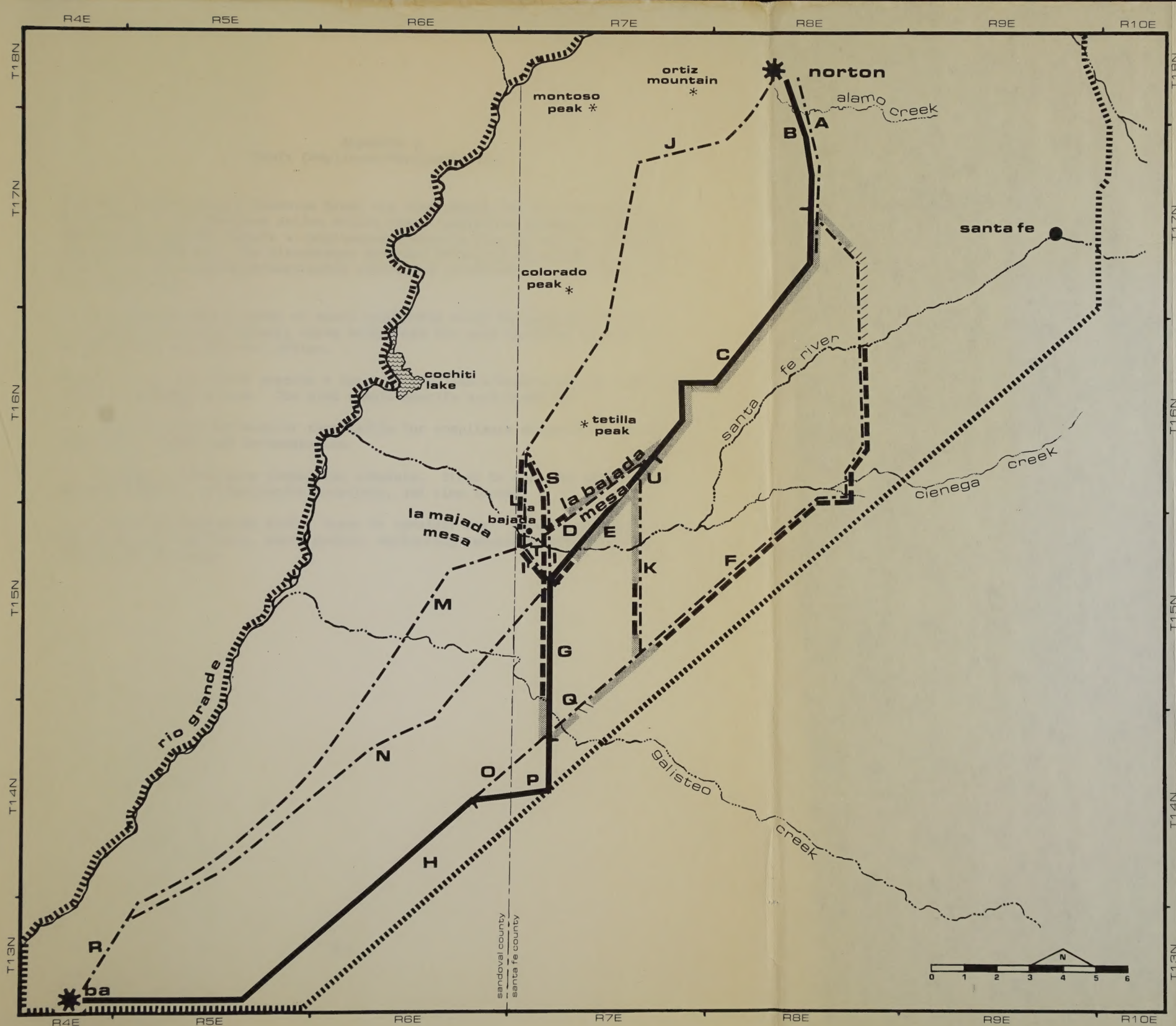
ASSUMPTIONS

1. Where no existing accesses occur assume 6000 feet/mile road.
2. Where existing access exists assume 100 feet spur road/tower.
3. All access and apur roads are 14 feet wide.
4. Assumed approximately 4.4 double-circuit and 3.8 single-circuit structure per mile.
5. Storage site would be located along segment H, M, or N

PROPOSED
BA STATION TO NORTON STATION
345 KV TRANSMISSION PROJECT

VISUAL CONTRAST/ IMPACT

LOW
MODERATE
HIGH



SOURCE: WIRTH ASSOCIATES, 1981

Appendix D
Draft Compliance/Monitoring Plan

The Taos and Rio Puerco Resource Areas are responsible for the compliance/monitoring of the Proposed Action within their respective Resource Area. Each Resource Area would prepare a compliance/monitoring plan in accordance with the BLM 2064 Manual. The Albuquerque District Office is responsible for quality control of the compliance/monitoring effort and coordination across Resource Area boundaries.

It is estimated that a total of seven workmonths would be required for the compliance/monitoring effort, three workmonths for each Resource Area and one workmonth for the District Office.

Each Resource Area would prepare a detailed compliance/monitoring plan for their respective Resource Area. The plan should specify such items as:

1. Project inspector/monitor responsible for compliance supervision and the monitoring studies and documentation.

2. Prepare a compliance inspection schedule. Items to consider are the construction phases, mitigation/stipulations, and time lapse.

3. Prepare a monitoring plan. Items to consider are: special treatment areas for study and comparison, photo points, monitoring inspection schedule, and information feedback.

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